

Gestetner[®]

RICOH[®]

savin[®]



C217/C225

SERVICE MANUAL

RICOH GROUP COMPANIES

PN: RCSM1730

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C217/C225 SERVICE MANUAL

PN: RCSM217

WARNING

The Service Manual contains information regarding service techniques, procedures, processes and spare parts of office equipment distributed by Ricoh Corporation. Users of this manual should be either service trained or certified by successfully completing a Ricoh Technical Training Program.

Untrained and uncertified users utilizing information contained in this service manual to repair or modify Ricoh equipment risk personal injury, damage to property or loss of warranty protection.

Ricoh Corporation

LEGEND

PRODUCT CODE	COMPANY		
	GESTETNER	RICOH	SAVIN
C217	5303	VT1730	—
C225	5304	VT1800	3100DNP

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IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the machine, make sure that the power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.

HEALTH SAFETY CONDITIONS

1. If you get ink in your eyes by accident, try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.
2. If you ingest ink by accident, induce vomiting by sticking finger down throat or by giving soapy or strong salty water to drink.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The printer and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Dispose of replaced parts in accordance with local regulations.
2. Used ink and master should be disposed of in an environmentally safe manner and in accordance with local regulations.

OVERALL MACHINE INFORMATION (C217)		
	OVERALL MACHINE INFORMATION (C225)	
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	DETAILED SECTION DESCRIPTION (C225)	
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PCRIP-10 PRIPORT CONTROLLER		

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OVERALL MACHINE INFORMATION

1. SPECIFICATION

Configuration:	Desk top
Master Making Process:	Digital
Printing Process:	Full automatic one drum stencil system
Image Mode:	Line/Photo
Original Type:	Sheet
Original Weight:	(17.0 lb~90 lb)
Original Size:	Max: 216 mm x 356 mm (8 1/2" x 14") Min: 90 mm x 140 mm (3 1/2" x 5 1/2")
Paper Size:	Max: 216 mm x 356 mm (8 1/2" x 14") Min: 90 mm x 140 mm (3 1/2" x 5 1/2")
Paper Weight:	(18 lb~110 lb)
Printing Area:	210 mm x 349.6 mm (8.3" x 13.8") or less
Printing Speed:	70/100/130 cpm (3 settings)
First Print Time:	28 seconds \pm 2 seconds
Leading Edge Margin:	5 mm \pm 2 mm (0.2" \pm 0.08")
Trailing Edge Margin:	1 mm \pm 1 mm
Left Side Margin:	5 mm~10 mm (0.2"~0.4")
Right Side Margin:	5 mm~10 mm (0.2"~0.4")
Paper Feed Table Capacity:	500 sheets (80 g/m ² , 20.0 lb)
Paper Delivery Table Capacity:	500 sheets (80 g/m ² , 20.0 lb)
Master Eject Box Capacity:	More than 15 masters
ADF Original Capacity:	6 sheets or a 0.6 mm height

Weight: 51 kg (112 lb)

Power Source: 120 V 60 Hz more than 2.4 A

Power Consumption: Master Making: Less than 160 W
Printing: Less than 160 W

Dimensions: [Stored] 692 mm x 612 mm x 440 mm
(W x D x H) (26.2" x 24.1" x 17.3")
[Set up] 1050 mm x 612 mm x 440 mm
(41.3" x 24.1" x 17.3")

Pixel Density: 300 dpi

Print Counter: 7 digits

Master Counter: 6 digits

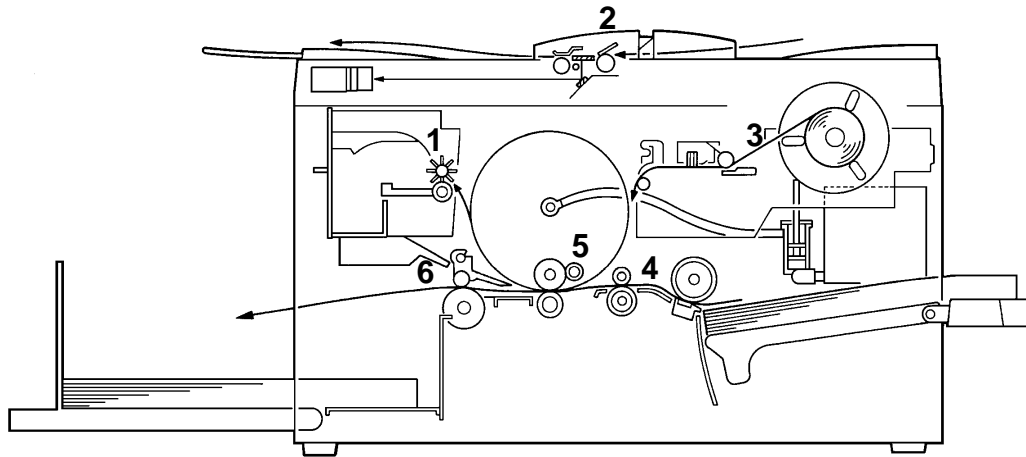
Noise Emission: Less than 70 dB
(Sound Pressure level*)
Master Making: 54 dB
Printing: 70 cpm: 62 dB
100 cpm: 64 dB
130 cpm: 68 dB
*= The measurements are to be made according to ISO7779, respectively.

Optional Equipment: Key Counter, Tape Dispenser

Consumables:

Name	Size	Remarks
Thermal master	Length: 125 m (410 ft)/roll Width: 240 mm (9.5")	255 masters can be made per roll. Storage Conditions: -10~40°C, 14°~104°F, 10~90% RH
Ink	500 cc/pack	Storage Conditions: -5~40°C, 23°~140°F, 10~90% RH
Tape for tape maker	35 m (114.8 ft)/roll	
Thermal head cleaner	Cleaner pen – 1pc Replacement felt – 10 pcs Cleaner bottle – 1 pc	Clean the thermal head using the cleaner after 2 master rolls have been used.

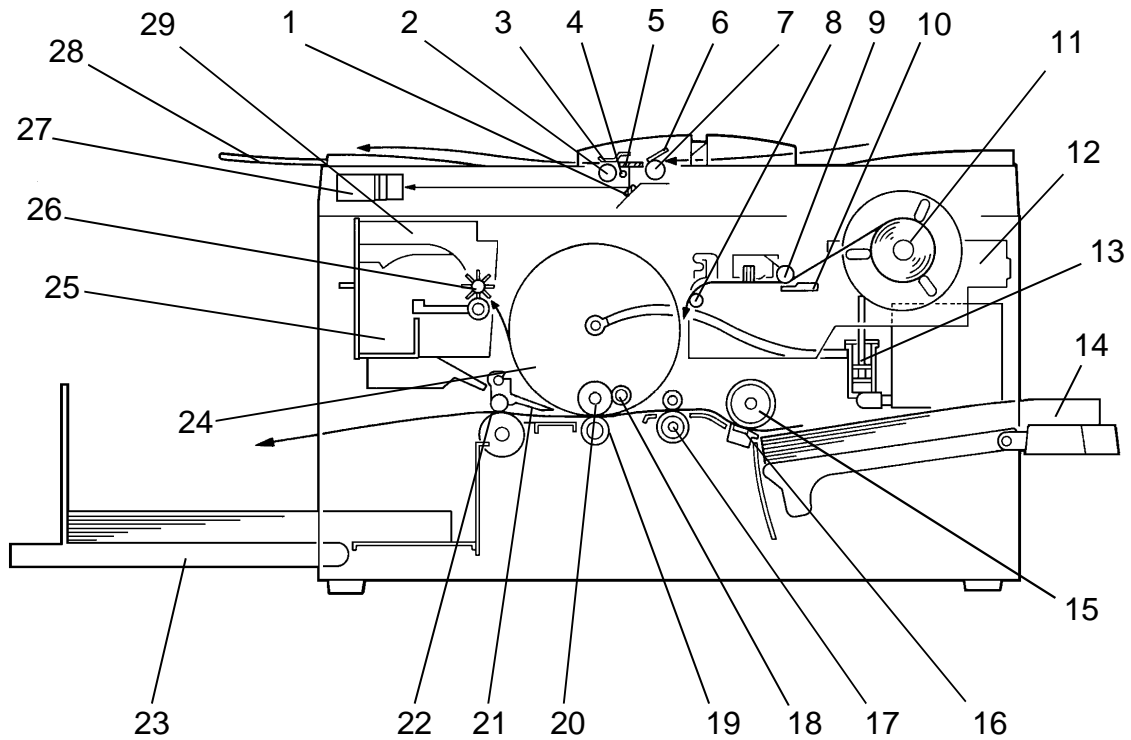
2. PRINTING PROCESS



Overall
Machine
Information

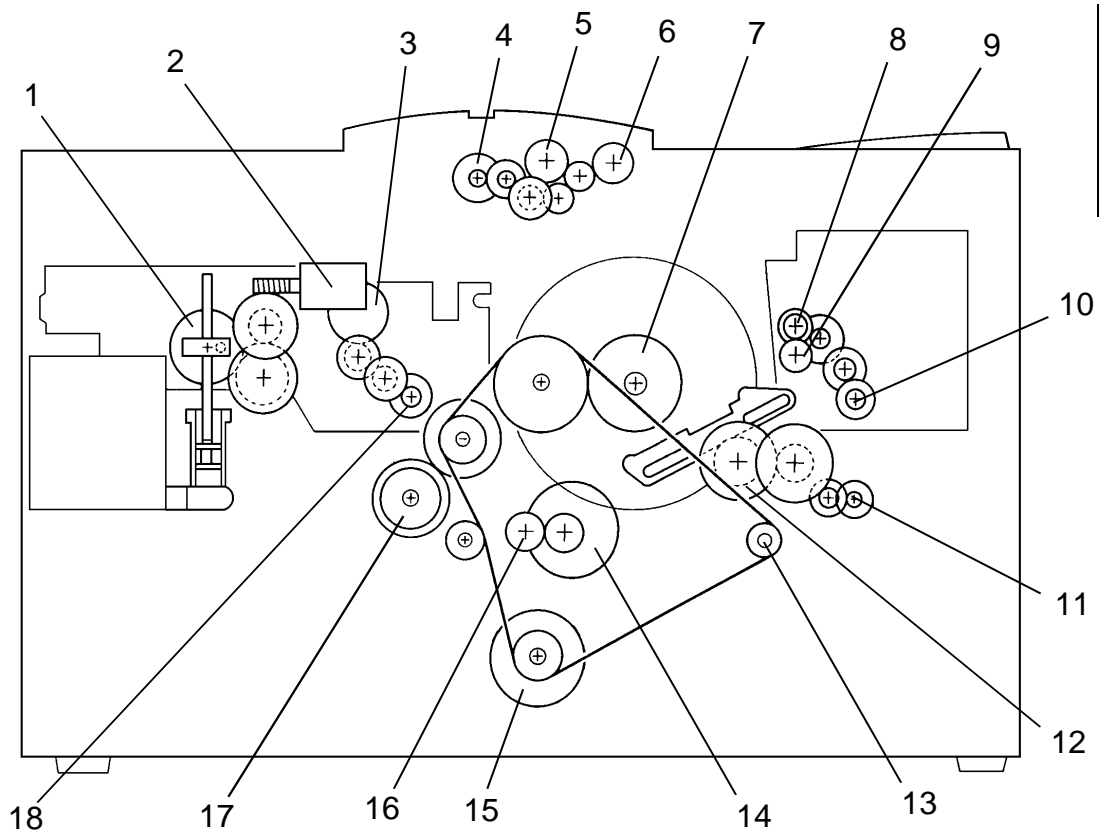
- | | |
|----------------------|--|
| 1. Master Ejection: | Removes the master from the drum and ejects the used master into the master eject box. |
| ↓ | |
| 2. Scanning: | Scans the original image through the mirror and the lens to the CCD while feeding the original. |
| ↓ | |
| 3. Master Feeding: | Converts the scanned CCD image signals into digital signals which are used by the thermal head to develop the master. The generated heat develops the master by atomizing the plastic coating. It is then clamped and wrapped around the drum surface. The master is cut to cover the entire drum surface. |
| ↓ | |
| 4. Paper Feeding: | Sends paper to the drum section. |
| ↓ | |
| 5. Printing: | Presses the paper fed from the paper feed section onto the drum. This transfers the ink to the paper through the drum screen and the master. |
| ↓ | |
| 6. Paper Delivering: | The air knife and exit pawls remove the printed paper from the drum, and eject the paper onto the paper delivery table. |

3. MECHANICAL COMPONENT LAYOUT



- | | |
|----------------------------|--------------------------|
| 1. Mirror | 16. Friction Pad |
| 2. Original Feed Roller | 17. 2nd Feed Roller |
| 3. Original Pressure Plate | 18. Doctor Roller |
| 4. Exposure Lamp | 19. Press Roller |
| 5. Exposure Glass | 20. Ink Roller |
| 6. Original Friction Pad | 21. Exit Pawl |
| 7. Original Pick-up Roller | 22. Exit Rollers |
| 8. Master Tension Roller | 23. Paper Delivery Table |
| 9. Plotter Roller | 24. Drum |
| 10. Thermal Head | 25. Master Eject Box |
| 11. Master Roll | 26. Master Eject Roller |
| 12. Plotter Unit | 27. CCD Unit |
| 13. Ink Pump | 28. Original Exit Tray |
| 14. Paper Table | 29. Master Eject Unit |
| 15. Paper Feed Roller | |

4. DRIVE LAYOUT



Overall
Machine
Information

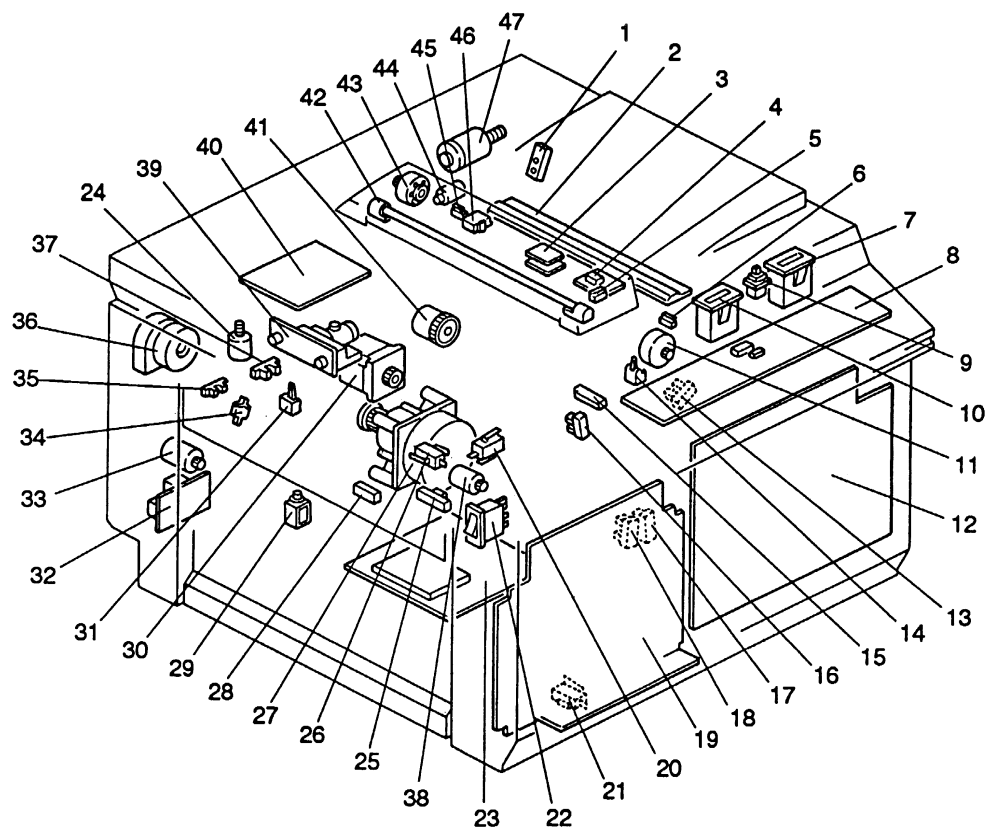
- | | |
|-----------------------------------|-------------------------------|
| 1. Pump Drive Gear | 10. Master Eject Motor |
| 2. Ink Supply Motor | 11. Master Clamper Motor |
| 3. Platen Roller Gear | 12. Master Clamper Drive Gear |
| 4. Original Feed Motor | 13. Exit Roller Pulley |
| 5. Original Pick-up Roller | 14. 2nd Feed Motor |
| 6. Original Feed Roller | 15. Main Motor |
| 7. Drum Drive Gear | 16. 2nd Feed Roller Gear |
| 8. Upper Master Eject Roller Gear | 17. Paper Feed Roller Gear |
| 9. Lower Master Eject Roller Gear | 18. Master Feed Motor |

5. ELECTRICAL COMPONENT DESCRIPTION

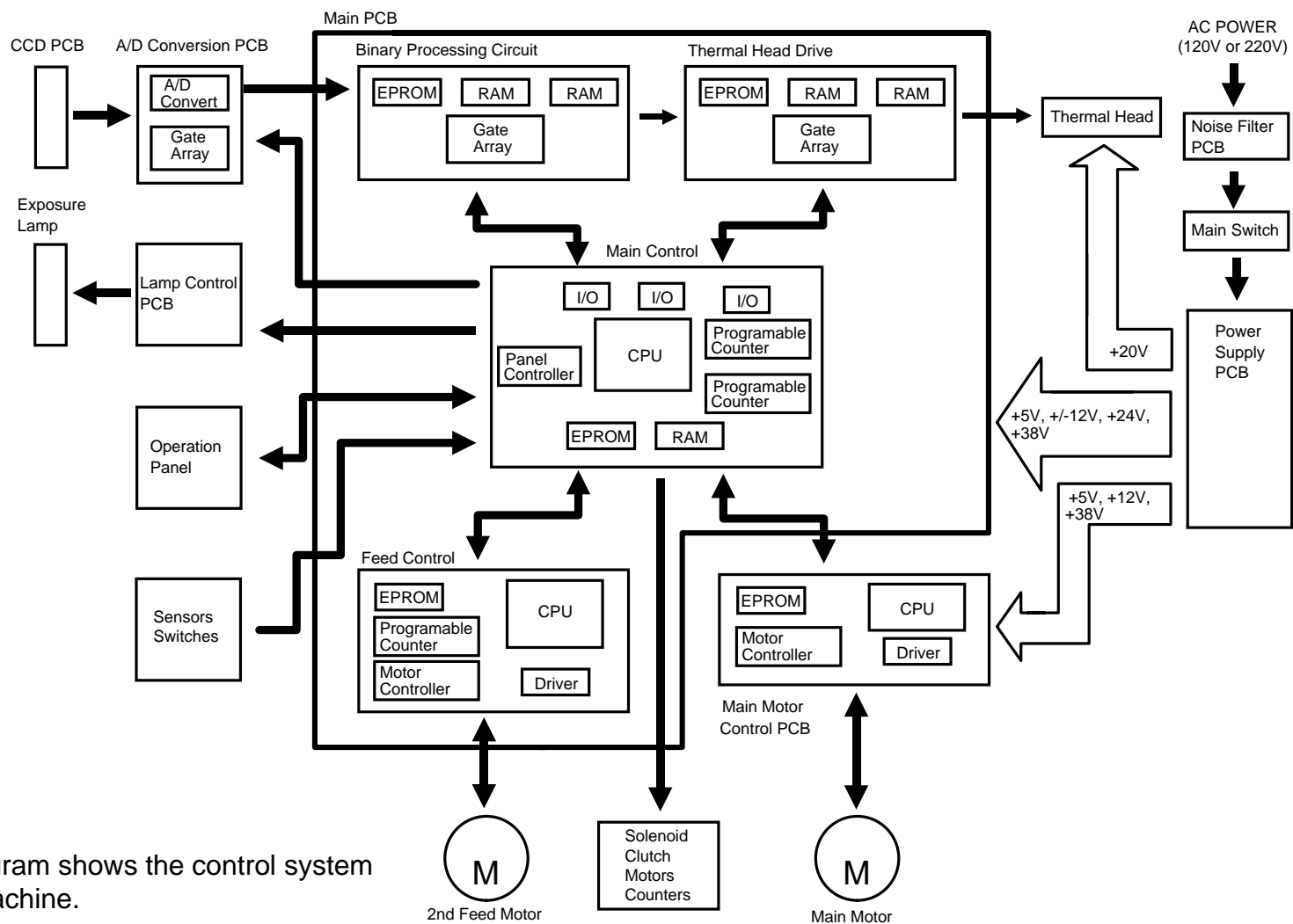
Index No.	Name	Function	P to P Location
Motors			
11	Master Feed	Feeds the master to the drum.	F-5
24	Pressure Plate	Drives the pressure plate.	F-6
27	Main	Drives paper feed, drum, printing and paper delivery unit components.	F-2
30	2nd Feed	Drives the 2nd feed roller.	B-7
33	Master Clamper	Open and closes the master clamper.	B-7
36	Air Knife	Rotates the fan to separate the paper from the drum.	B-7
38	Master Eject	Sends used master into the master eject box.	F-6
43	Original Feed	Transports the original for scanning.	A-3
44	Master Cutter	Cuts the master.	F-4
47	Ink Supply	Drives ink pump to supply ink.	B-6
Solenoid			
29	Pressure Release Solenoid	Releases the press roller to apply printing pressure.	B-6
Sensors			
1	Master End	Detects if the plotter unit runs out of master roll.	F-4
3	Original Registration (Upper: light receiver, Lower: light emitter)	Informs the CPU of the original position. Also, detects original misfeed.	A-2 A-3
13	Feed Jam Timing	Determines the paper misfeed check timing.	F-7
14	Paper End	Detects if the paper is set on the paper table.	F-7
15	Registration	Detects misfeeds. In 2nd feed roller area .	F-7
16	Feed Start Timing	Determines the paper feed start timing.	F-7
17	Exit Jam Timing	Determines the paper misfeed check timing.	F-8
18	Master Eject Position	Detects master eject position of the drum.	F-7
25	Drum Master	Detects if the master is on the drum.	F-8
28	Exit	Detects paper misfeeds.	F-8
31	Master Eject	Detects used master misfeeds.	F-6
35	Full Master	Detects if the master eject box is full.	F-6
37	Pressure Plate H.P.	Detects the pressure plate home position.	F-6
46	Original Set	Detects if the original is set on the original table.	A-3
Switches			
5	ADF Open	Check if the ADF is open.	A-3
6	Left Cutter	Determines the left limit position of the cutter.	F-5
9	Master Cut	Starts the cutter motor to cut the master.	F-5
20	Scanner Unit Open	Checks if the scanner unit is open.	F-1
21	Delivery Cover Open	Checks if the delivery cover is open.	F-1
22	Main	Turns the power on or off.	B-1
26	Master Eject Box	Checks if the master eject box is set correctly.	F-1

Index No.	Name	Function	P to P Location
34	Master Clamper	Detects the master clamper open/close position.	F-8
45	Right Cutter	Determines the right limit position of the cutter.	F-5
Printed Circuit Board			
4	Lamp Control	Controls the power to the exposure lamp.	A-2
8	Operation Panel	Interfaces the CPU and the operator.	B-5
12	Main	Controls all machine functions.	C-5
19	Power Supply	Provides power for all DC components.	D-1
23	Main Motor Control	Controls the main motor speed.	F-2
32	Noise Filter	Filters electrical noise on the AC power input lines.	A-1
39	CCD	Converts light intensity into an electrical signal.	A-5
40	A/D Conversion	Converts the analog signals into digital signals.	A-4
Counters			
7	Print	Keeps track of the total number of prints made.	F-5
10	Master	Keeps track of the total number of masters made.	F-5
Others			
2	Thermal Head	Plots the master using heat.	E-2
41	Paper Feed Clutch	Transmits the main motor drive to the paper feed roller at an appropriate timing.	B-6
42	Exposure Lamp	Applies light to the original for exposure.	A-2

ELECTRICAL COMPONENT LAYOUT



6. OVERALL MACHINE CONTROL



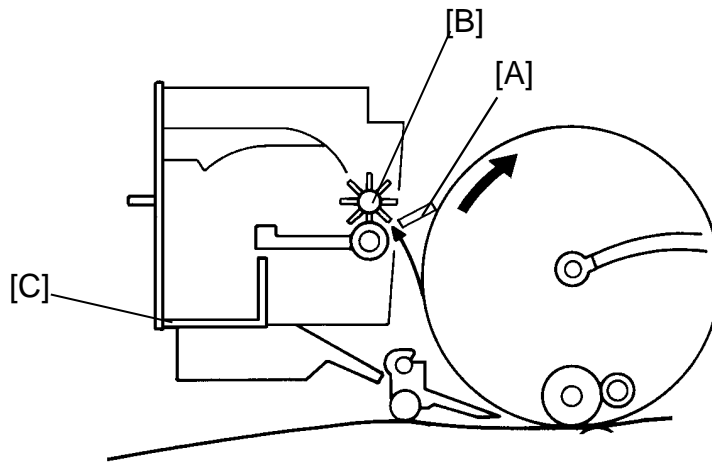
This diagram shows the control system of the machine.

Overall
Machine
Information

DETAILED SECTION DESCRIPTIONS

1. MASTER EJECT

1.1 OVERALL



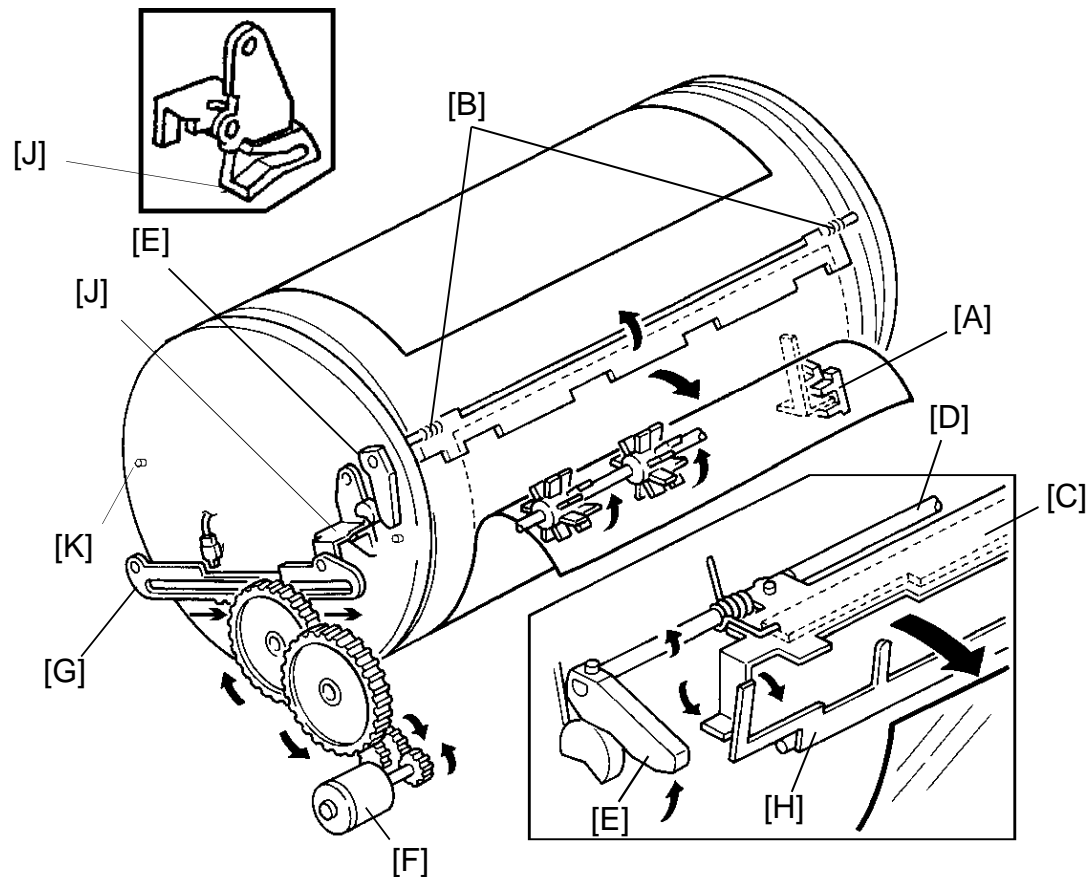
At the end of the printing cycle, the used master remains wrapped around the drum to prevent the ink on the drum surface from drying. When the Master Making key is pressed to make a new master, the used master is removed from the drum.

The machine checks if the drum is at the master eject position and if the master is on the drum by the drum master sensor. The master clamber [A] then opens to eject the master. If there is no master on the drum, the machine skips the master eject operation and starts the master making process.

The master eject rollers [B] turn for 0.5 seconds to pick up the leading edge of the used master. After closing the master clamber, the drum starts rotating in the slowest speed (30 rpm). At the same time the master eject rollers turn and feed the used master into the master eject box [C].

When the drum stops at the master feed position after one and a half turns, the pressure plate drive motor starts turning to compress the used master in the master eject box.

1.2 MASTER CLAMPER OPEN MECHANISM



When the Master Making key is pressed the master eject position sensor [A] is used to confirm that the drum is positioned at the master eject position. Normally, the drum is stopped at this position after every print job. If the drum is not at this position, the machine first moves the drum to the master eject position before opening the master clamber.

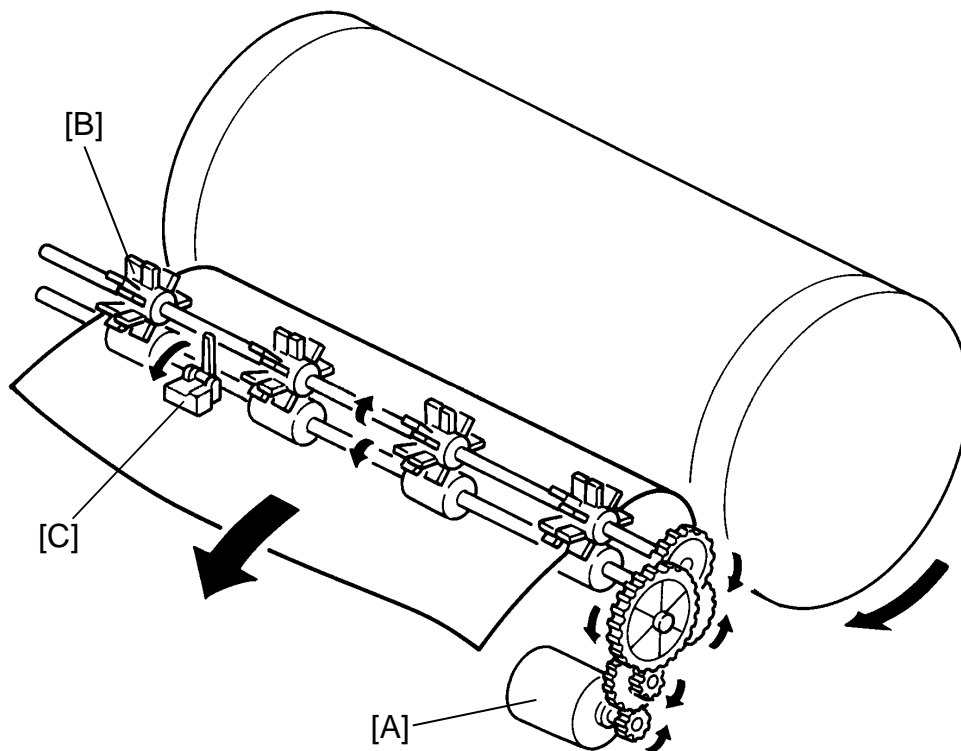
The drum is moved to the eject position and locked using a "V" shaped notch on the rear of the drum positioning guide [J] to locate and lock the drum positioning stud [K]. A second stud, 180 degrees from the first, is used to position the drum during master feeding operations.

The master clamber has two springs [B] and a magnet plate [C] to secure the master's leading edge in the clamber. The clamber is fixed on the clamber shaft [D] which has a lever [E] at the rear side.

The clamber motor [F] drives the moving link [G] and pushes up the clamber lever [E].

The master clamber then lifts the master eject arm [H] to release the master's leading edge from the clamber.

1.3 MASTER EJECT ROLLER MECHANISM



The master eject rollers are driven by the master eject motor [A] through idle gears. The upper eject roller [B] has paddles to assure that the master is picked up.

When the master clamper is opened and the master's leading edge is released from the master clamper, the master eject motor turns on for 0.5 seconds to pick up the leading edge of the used master.

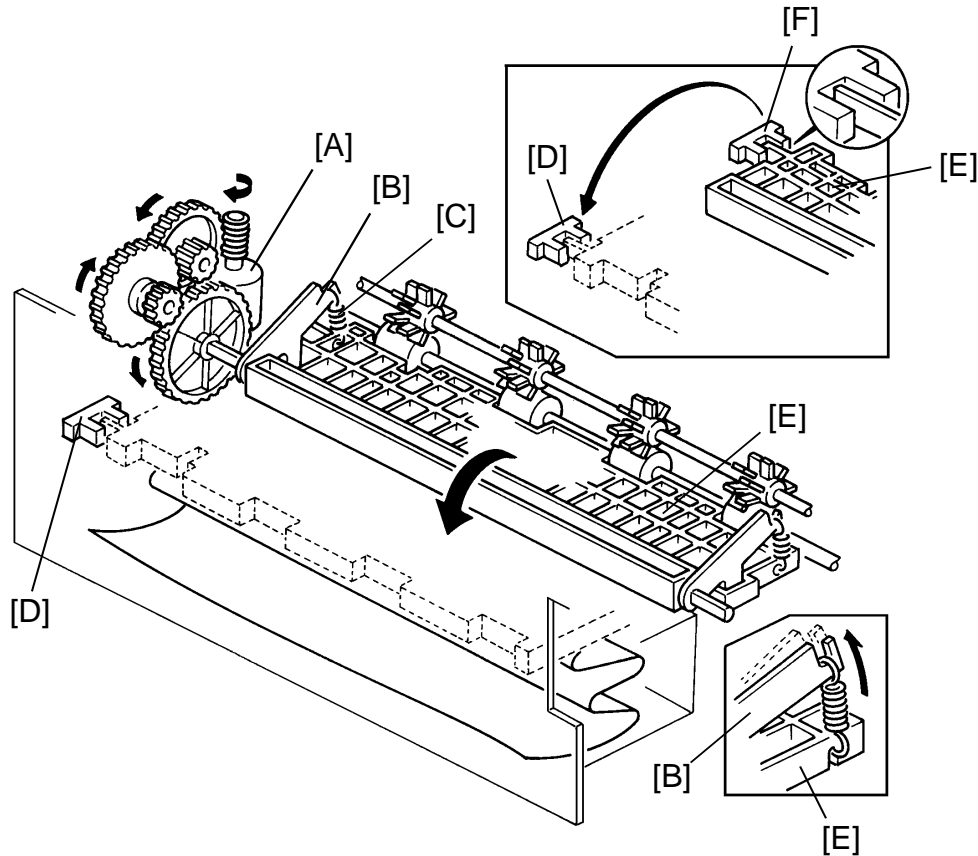
When the master eject motor is turned off, the master clamper motor turns in reverse direction to close the master clamper.

The drum then starts turning at the slowest speed (30 rpm). At the same time, the master eject rollers turn again to feed the master into the master eject box.

After one turn of the drum, the master eject motor stops. The drum continues turning for a half turn and stops at the master feed position.

The master eject sensor [C] is used to detect master eject jams.

1.4 PRESSURE PLATE MECHANISM



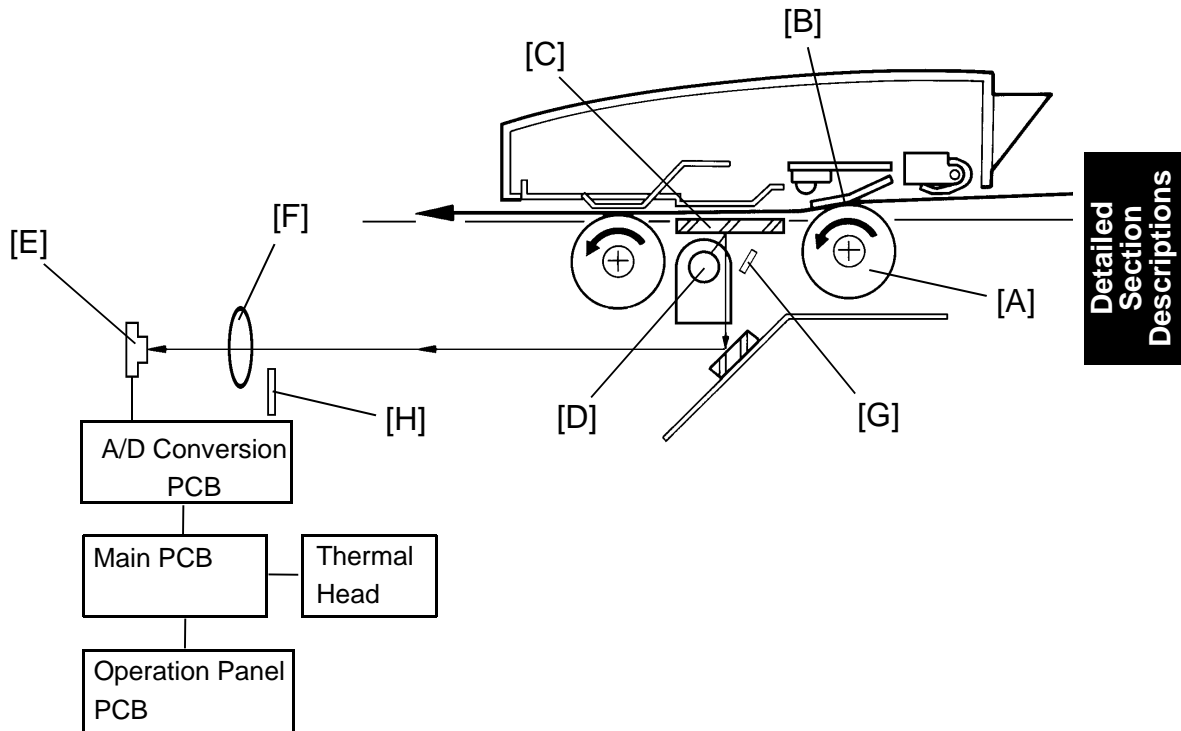
The pressure plate motor [A] drives the pressure plate [E] through the drive arm [B] and the pressure springs [C].

When the master has been ejected into the master eject box, the pressure plate motor turns on and remains on until the full master detection sensor [D] is actuated by the actuator tab on the pressure plate [E]. When the full master sensor is actuated, the motor stops. When master making and cutting are completed, the motor turns in the reverse direction to return the pressure plate to the home position. When the pressure plate home position sensor [F] is actuated, the motor stops.

If the full master sensor is not actuated within 2.4 seconds after the pressure plate motor is activated, the machine stops the motor. The Empty Master Eject Box indicator blinks after the master making procedure has finished and the drum is positioned at the master exit position (drum home position).

2. SCANNER AND OPTICS SECTION

2.1 OVERALL

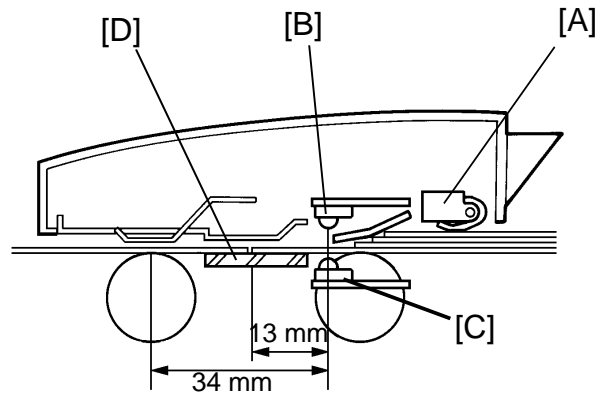


The first original at the bottom of the stack on the original table is separated from the other originals by the original pick-up roller [A] and the original friction pad [B], and is fed across the exposure glass [C]. The scanning starts when the original is transported 5mm from the scan line. The master plotting is synchronized with the original feeding.

The light of the exposure lamp [D] is reflected from the original and reflects off the mirror through the lens [F] to the CCD [E]. The reflector [G] compensates for shadows from the edges of cut-and-paste originals. A shading plate [H] installed between the mirror and the lens cuts some of the light to correct for uneven light intensity between the center and both ends of the lamp.

The light is changed to an electrical signal in each element of the CCD. The analog signals from the CCD are converted into 4-bit digital data signals in the A/D (analog\digital) conversion PCB and sent to the main PCB in which each 4-bit digital data is converted into 1-bit data. The main PCB holds the 1-bit data for each pixel. The PCB uses the 1-bit data to turn on the thermal head which will burn each pixel onto the master.

2.2 ORIGINAL FEED MECHANISM



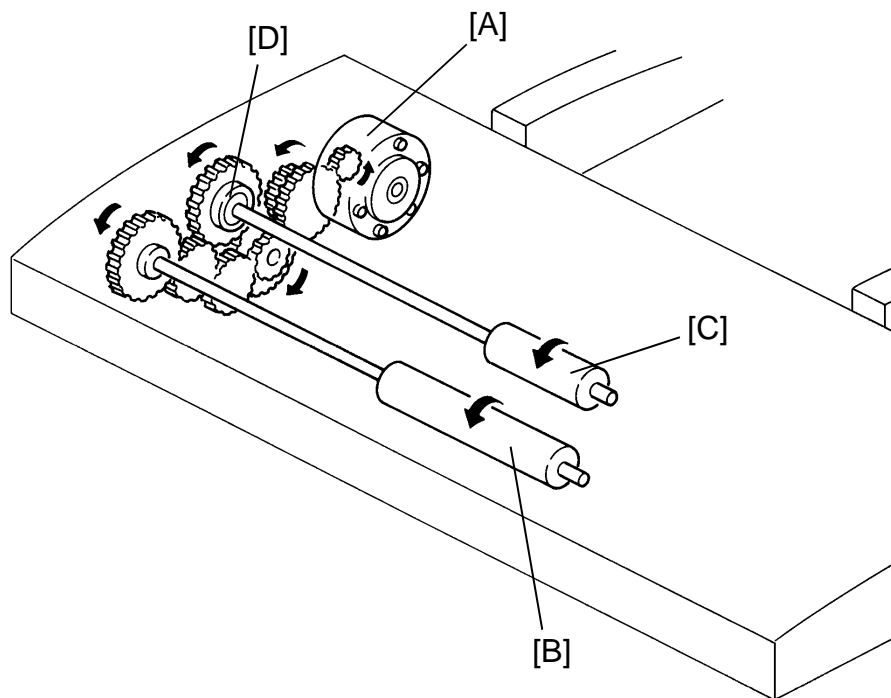
The originals on the original table are detected by the original set sensor [A]. A photo-transistor [B] in the upper position and an LED [C] in the lower position make-up the original registration sensor.

After the master on the drum is ejected to the master eject box, the original feed motor (stepper motor) starts rotating to feed the original to the exposure glass [D]. When the original is transported 13 mm past the original registration sensor, the original feed motor stops. At this time the original leading edge is aligned with the CCD scan line on the exposure glass. Then the original feed motor starts again synchronizing with the master feed.

The original pick-up roller keeps turning after the original trailing edge passes the roller, so if a 2nd original is present, it will be fed directly after the trailing edge of the 1st original.

After the 1st original's trailing edge is detected and transported 12 mm past the original registration sensor, the original set sensor checks whether the next original is present. If no original is detected, after the original trailing edge passes the original registration sensor, the original is transported further 35 mm ($34+1$) and fed out. If the next original is detected, the originals are transported 1 mm further to align the 2nd original leading edge with the scan line (the 2nd original has been transported a total of 13 mm from the original registration sensor), then the original feed motor stops. After printing of the 1st original is completed, the original transport motor starts again for the next original.

2.3 ORIGINAL FEED DRIVE MECHANISM



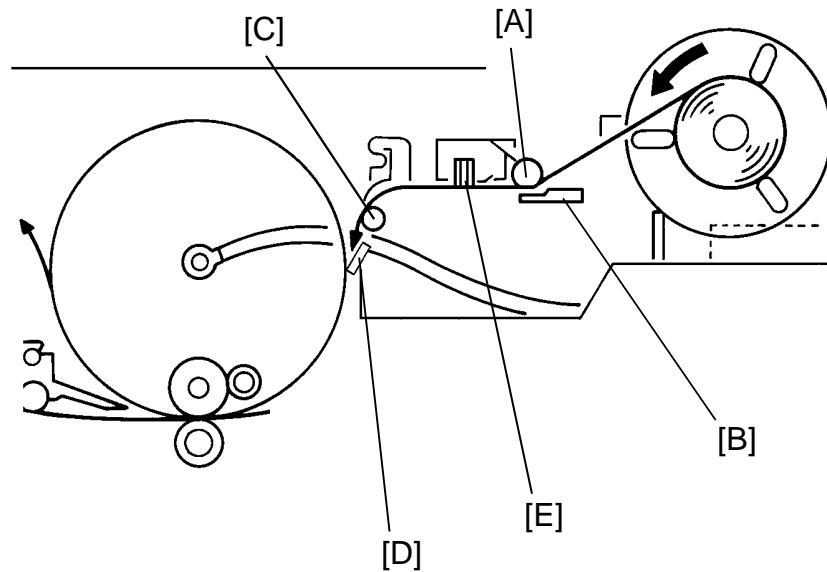
Detailed
Section
Descriptions

The pick-up roller [C] and the original feed roller [B] are driven through gears by the original feed motor [A] (stepper motor).

The original feed roller [B] diameter is a little bit larger than the original pick-up roller [C], so that a small gap is made between the continuous originals while being transported. A one-way clutch is installed in the pick-up roller gear [D] to absorb the speed difference between the pick-up roller and the original transport roller.

3. MASTER FEED

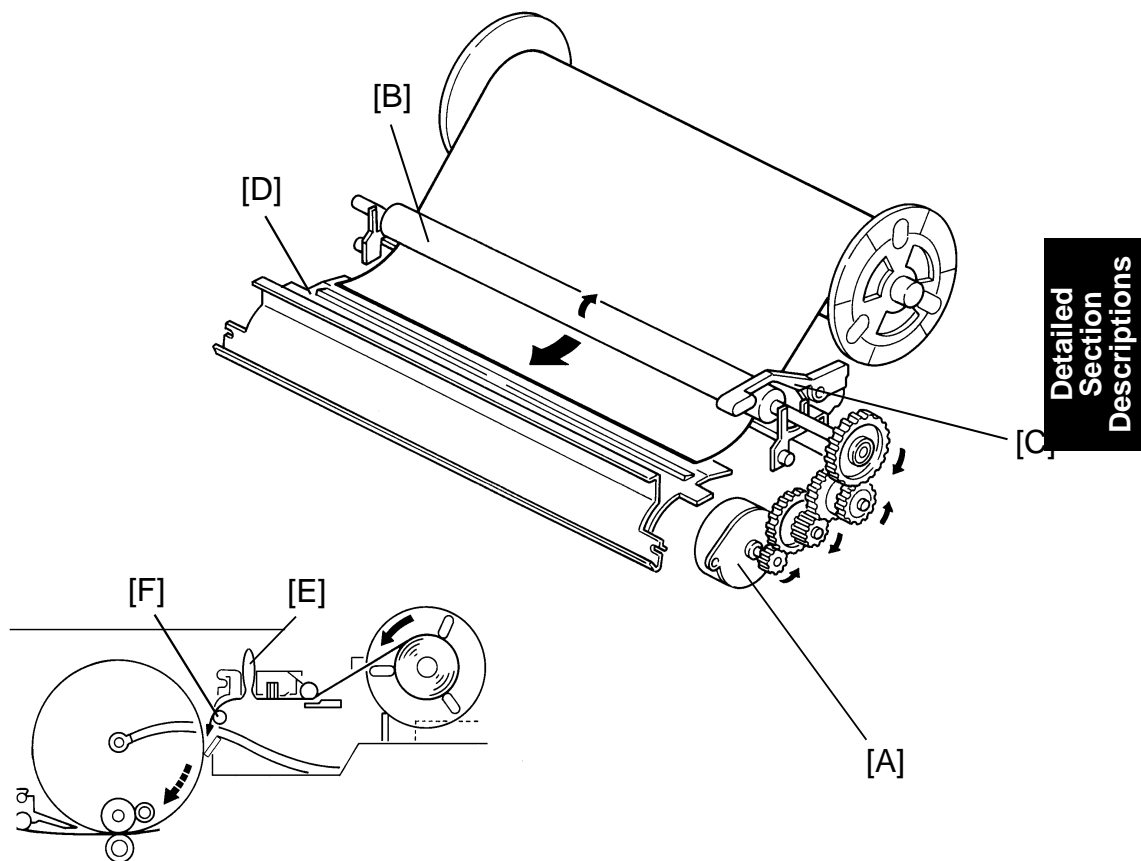
3.1 OVERALL



The master material is fed by the platen roller [A] across the thermal head [B]. When the drum is at the master feed position and the master clamber is opened, the tension roller [C] is released by the master clamber so that the master's leading edge is fed into the master clamber [D]. The leading edge of the master is clamped by the master clamber, and the master is wrapped completely around the drum surface and then is cut by the cutter [E].

The drum is moved to the eject position and locked using a "V" shaped notch on the rear of the drum positioning guide [J] to locate and lock the drum positioning stud [K]. A second stud, 180 degrees from the first, is used to position the drum during master feeding operations.

3.2 MASTER FEED MECHANISM

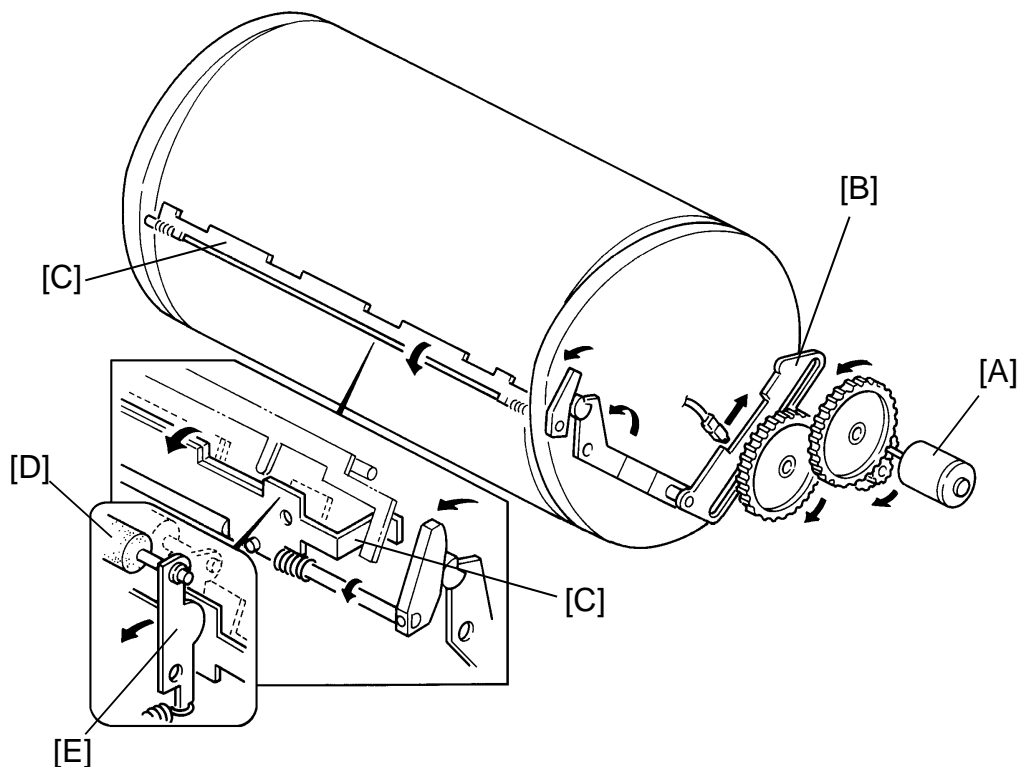


A stepper motor is used for the master feed motor [A] to drive the platen roller [B]. The thermal head is pressed against the platen roller by the pressure springs. The pressure can be released by the pressure release lever [C] for master roll replenishment.

After the master eject procedure is finished, the drum is stopped at the master feed position and the master clamber is opened for the new master. The master's leading edge is stopped on the guide plate [D] after the last master cutting procedure or after the master is cut manual. The master is fed for 23 mm and stopped once to synchronize with the original feed. The master is fed for a further 67.5 mm before the master clamber is closed. Since the clamber closing timing is later than when the master's leading edge reaches the clamber, a master buckle [E] is made on the master feed guide. This master buckle absorbs the shock wave from the master clamping operation.

The drum then turns intermittently in the slowest mode (30 rpm) to wrap the master around the drum. The intermittent rotation keeps the master buckle on the master feed guide to absorb the shock wave from the wrapping operation. The tension roller [F] is pressed to the guide plate which gives the tension to the master during the master wrapping operation.

3.3 MASTER CLAMPER OPERATION AND TENSION ROLLER RELEASE MECHANISM

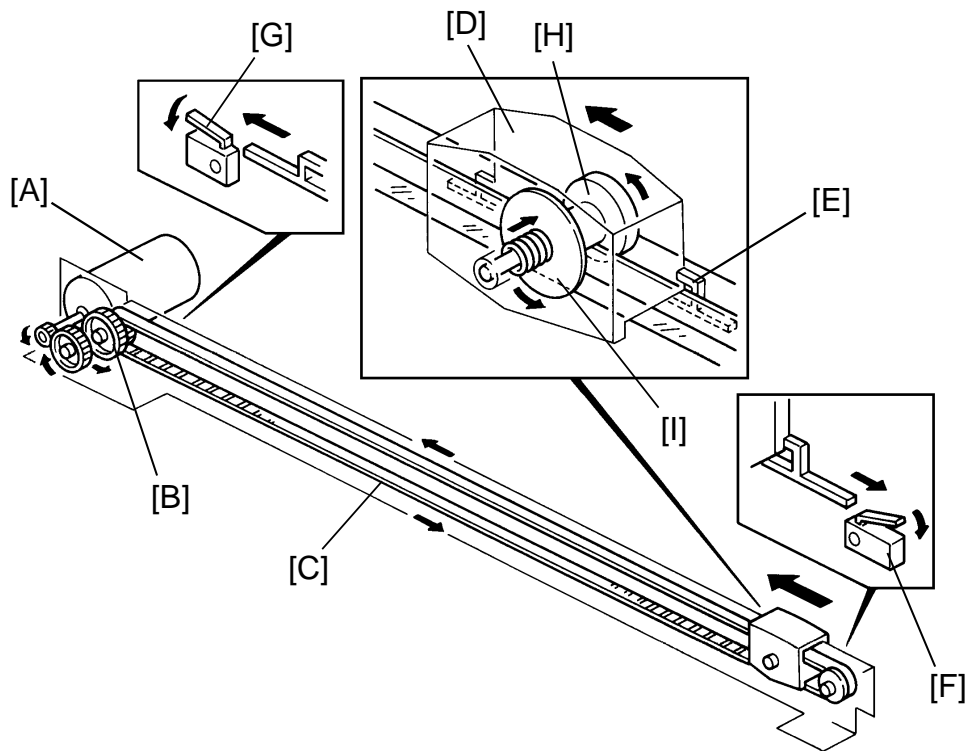


When the master eject is completed, the drum is stopped at the master feed position. At this time, the clamper motor [A] drives the moving link [B] to open the master clamper [C].

The friction roller [D] is normally pressed against the master feed guide plate to give tension to the master during the master wrapping operation. When the clamper is opened, the clamper pushes the friction roller arms [E] and releases the friction roller from the guide plate to allow the master to be fed into the master clamper.

To close the master clamper, the clamper motor turns in the reverse direction.

3.4 CUTTER MECHANISM



After the master making process is finished, the master feed motor turns off and the cutter motor [A] starts turning.

The cutter motor drives the pulley [B] and the timing belt [C]. The cutter holder [D] is mounted on the timing belt and has a switch actuator [E] at each end.

The cutter mechanism is bi-directional. As the cutter travels in one direction the master will be cut. During the next cutting operation, the cutter will travel in the opposite direction.

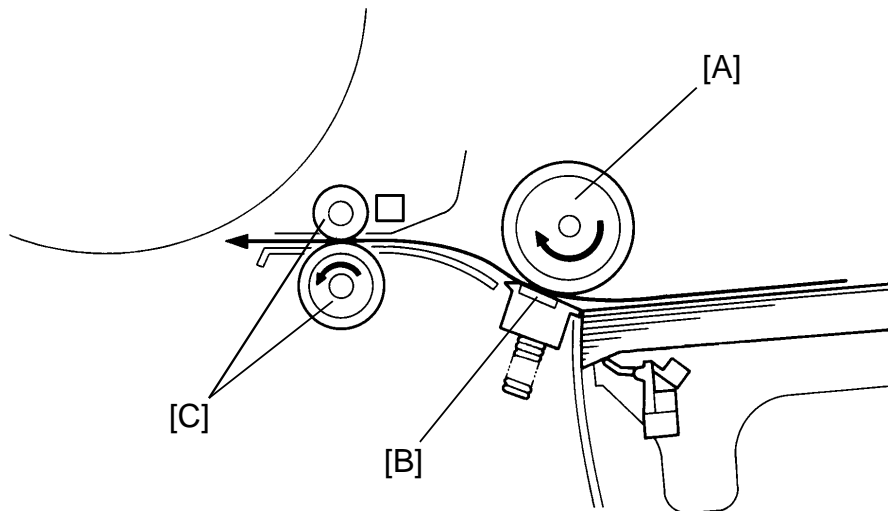
There are two cutter position switches one at the front [F] and one at the rear [G] of the cutter rail. When the cutter holder actuates one of these switches at the end of cutter holder drive operation, the cutter motor is turned off.

The inner roller [H] on the shaft of the rotary cutter blade [I] is touching the cutter rail, so that the cutter blade is rotating while the cutter holder is moving.

After the master cut operation, the drum starts turning again to wrap the remaining part of the master around the drum. At the same time, the master is fed another 32.6 mm ready for the next master making.

4. PAPER FEED SECTION

4.1 OVERALL

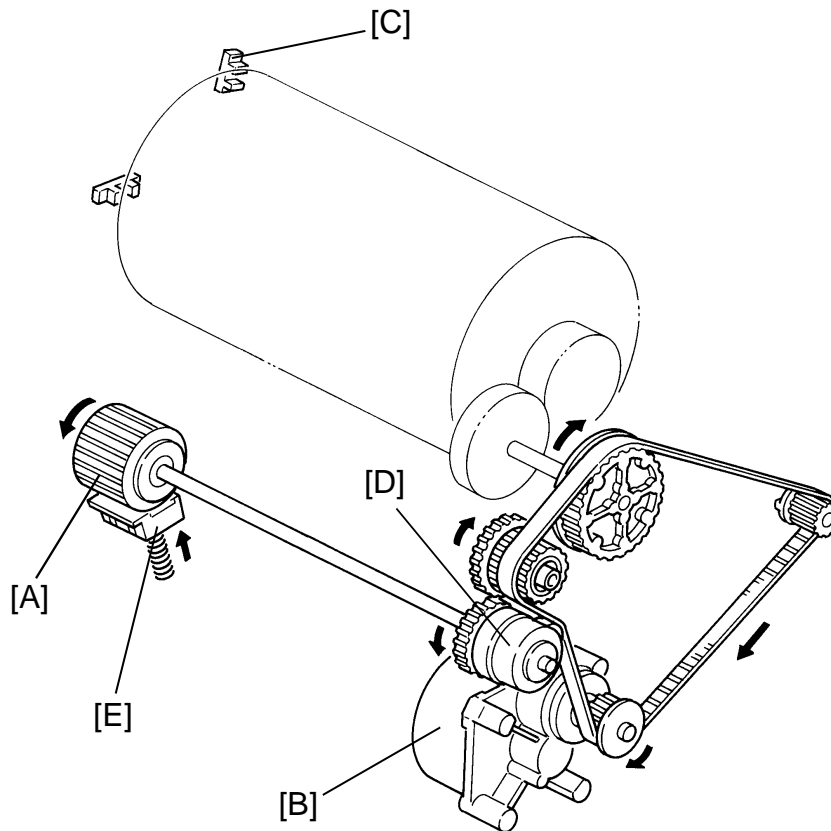


The sheet of paper on the paper feed table is separated by the paper feed roller [A] and the friction pad [B], and transported to the 2nd feed rollers [C]. The upper and lower 2nd feed rollers transport the sheet to the drum.

The paper feed roller is driven by the main motor, and an independent stepper motor is used to control the 2nd feed rollers. The 2nd feed rollers synchronize the paper feed timing with the image on the drum.

After the paper has come into contact with the 2nd feed rollers and the paper is corrected for skew, the rollers will start rotating.

4.2 PAPER FEED ROLLER MECHANISM

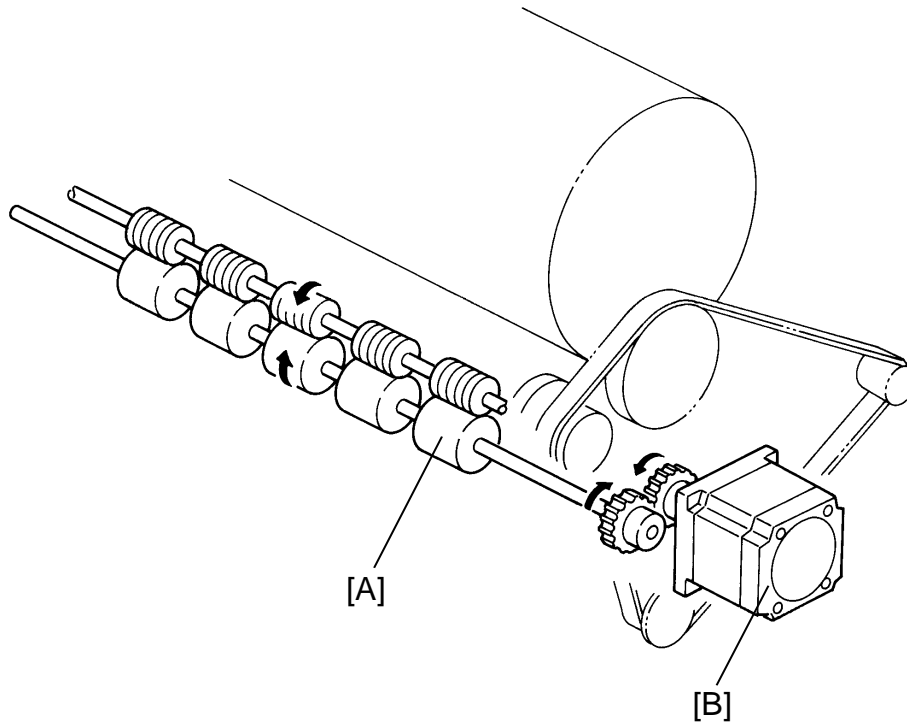


The paper feed roller [A] is driven by the main motor [B] through gears and a timing belt.

During the printing cycle, when the feed start timing sensor [C] is actuated by the actuator on the drum, the electromagnetic clutch [D] is energized to transmit the main motor rotation to the paper feed roller shaft. The top sheet of paper is separated from the paper stack by the friction between the feed roller [A] and the friction pad [E], and is transported to the 2nd feed roller.

A one-way clutch is installed in the paper feed roller so that after the electromagnetic clutch is de-energized, it does not disturb paper transportation.

4.3 2ND FEED ROLLER MECHANISM

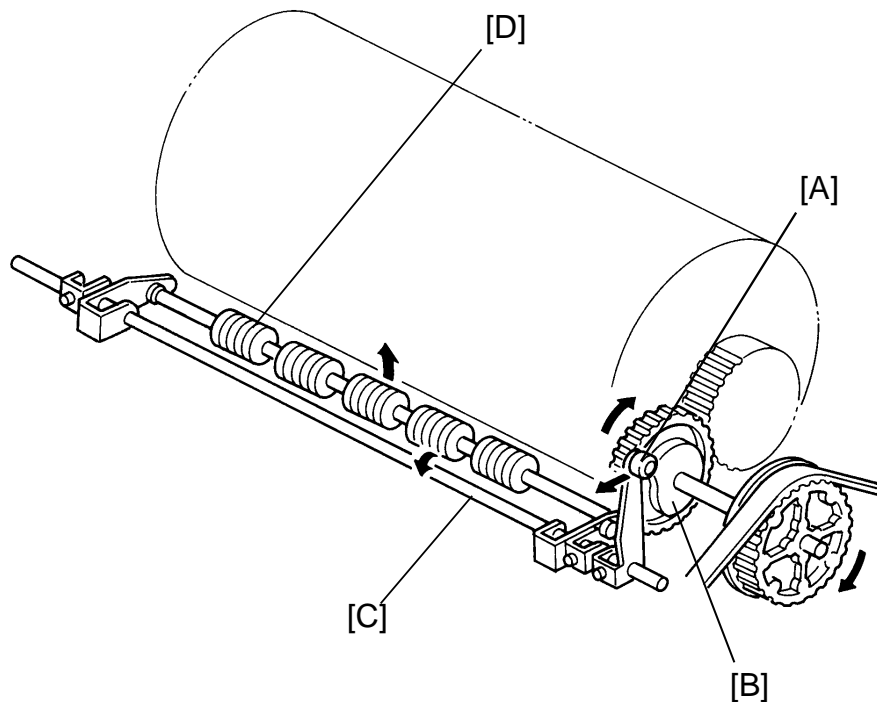


The lower 2nd feed roller [A] is driven by a stepper motor [B]. The main PCB controls the 2nd feed roller start timing to synchronize the image on the drum master and the printing paper.

The stepper motor rotation speed is changed according to the printing speed. Also, by pressing the image position keys on the operation panel, the 2nd feed timing is changed. If the paper feed timing is delayed, the image is shifted forward (smaller lead edge margin). If the paper feed timing is advanced, the image is shifted backward (large lead edge margin).

After the printing paper is caught between the drum and the press roller, the feed roller stepper motor stops.

4.4 UPPER 2ND FEED ROLLER RELEASE MECHANISM

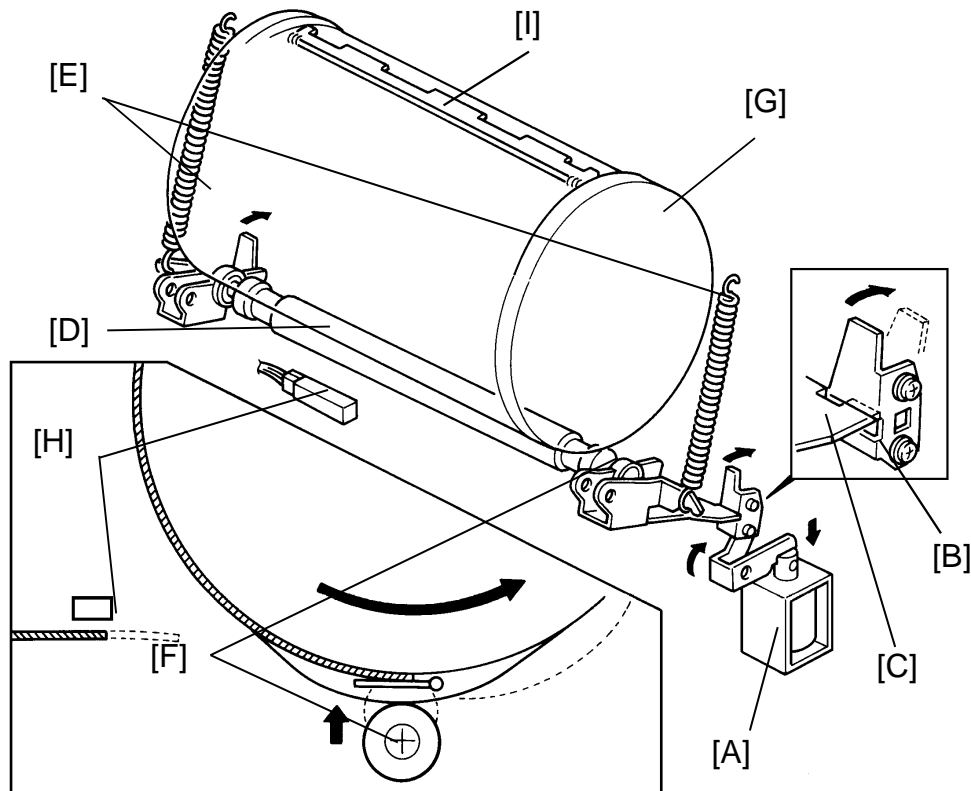


When the feed roller stepper motor stops, the upper 2nd feed roller is released from the lower 2nd feed roller. This is to prevent interference of the 2nd feed rollers while the paper is transported by the drum and the press roller.

When the cam follower [A] reaches the top of the cam [B] which is installed on the drum drive gear, the shaft [C] rotates clockwise (as seen from the operation side) to release the upper 2nd feed roller [D] from the lower 2nd feed roller.

If no image shifting mode is used (the image position indicator is at the "0" position), the upper 2nd feed roller is released when the paper is transported 30mm after reaching the press roller. Even if the paper feed timing is fully delayed (Max. 15 mm), the paper leading edge reaches to the press roller before the upper 2nd feed roller is released.

4.5 PRINTING PRESSURE MECHANISM



While the machine is not in the printing cycle, the solenoid [A] stays off and the stoppers [B] lock the brackets [C] to keep the press roller [D] away from the drum.

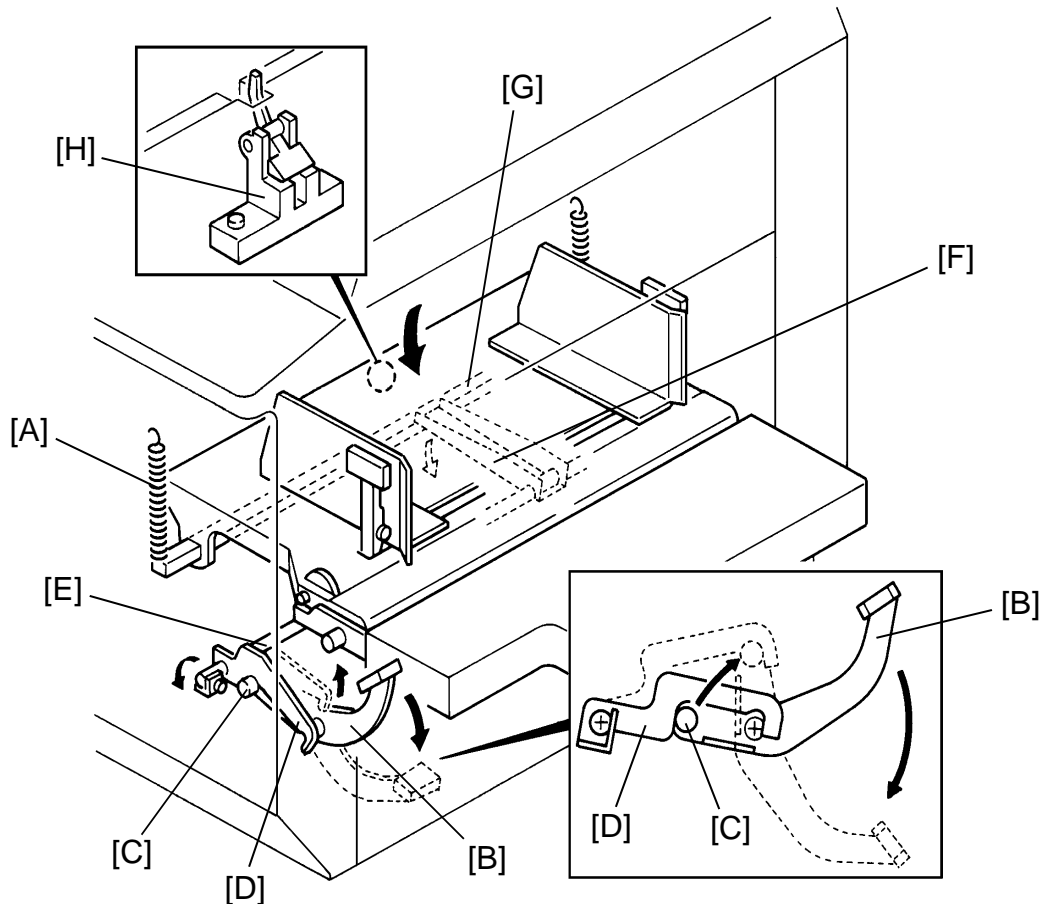
When the 1st sheet of paper is fed, the solenoid is energized but the brackets are still locked by the stoppers due to strong tension of the springs [E]. When the cam followers [F], mounted on both sides of the press roller shaft, reach the top of the cams [G] on the front and rear drum flanges, a small clearance is made between the stoppers and the brackets. They are then released from the brackets. Printing pressure is applied by tension of the springs when the cam followers reach the bottom of the cams.

During the printing cycle, the solenoid stays on. However, if paper does not reach the registration sensor [H] at the proper timing (at this time, the cam follower is on the top of the cam), the solenoid is de-energized to lock the brackets.

The printing pressure is released when the cams push down the cam followers so that the press roller does not contact the master clamber [I].

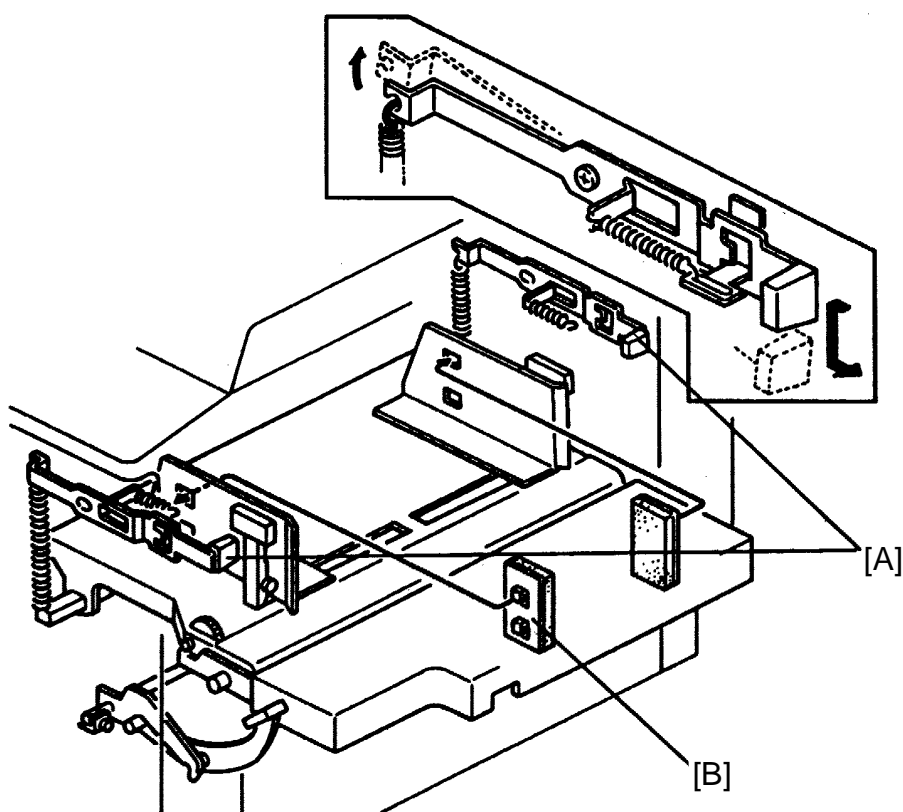
After printing is finished, the solenoid is de-energized and the stoppers return by tension of the springs. Before the drum returns to the home position, the bracket is locked by the stopper again when the cams push down the cam followers.

4.6 PAPER TABLE



Paper on the paper table is lifted up to contact with the paper feed roller by two springs [A]. When the lever [B] is lowered, the bearing [C] lifts up the arm [D] to rotate the shaft [E] counterclockwise. The bracket [F] pushes down the stay [G] and the paper table is lowered. The arm [D] hooks the bearing [C] to stop the table in the lower position to allow easy paper setting.

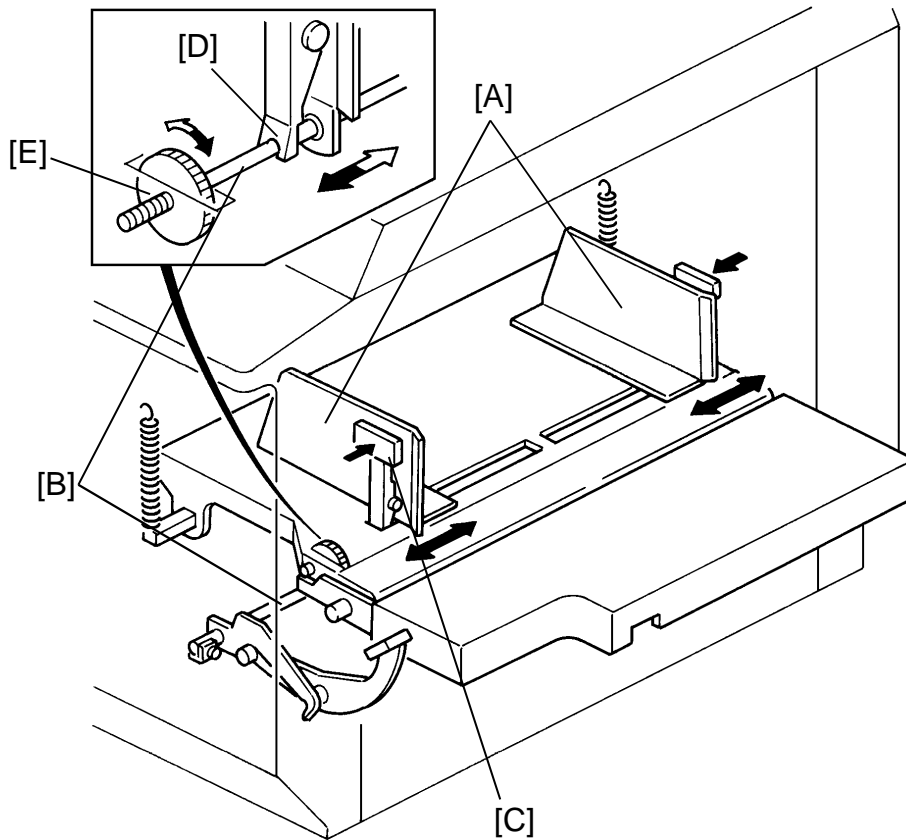
A photo-interrupter [H] is installed under the paper table to detect paper on the table.



The paper feed roller pressure can be changed by changing the position of the pressure adjustment levers [A]. Normally the levers should be in the upper position. If paper pick-up jams occur frequently, the levers should be lowered to increase the pressure.

If paper multifeed occurs frequently, the side pads [B] should be installed to apply stopping pressure to the paper.

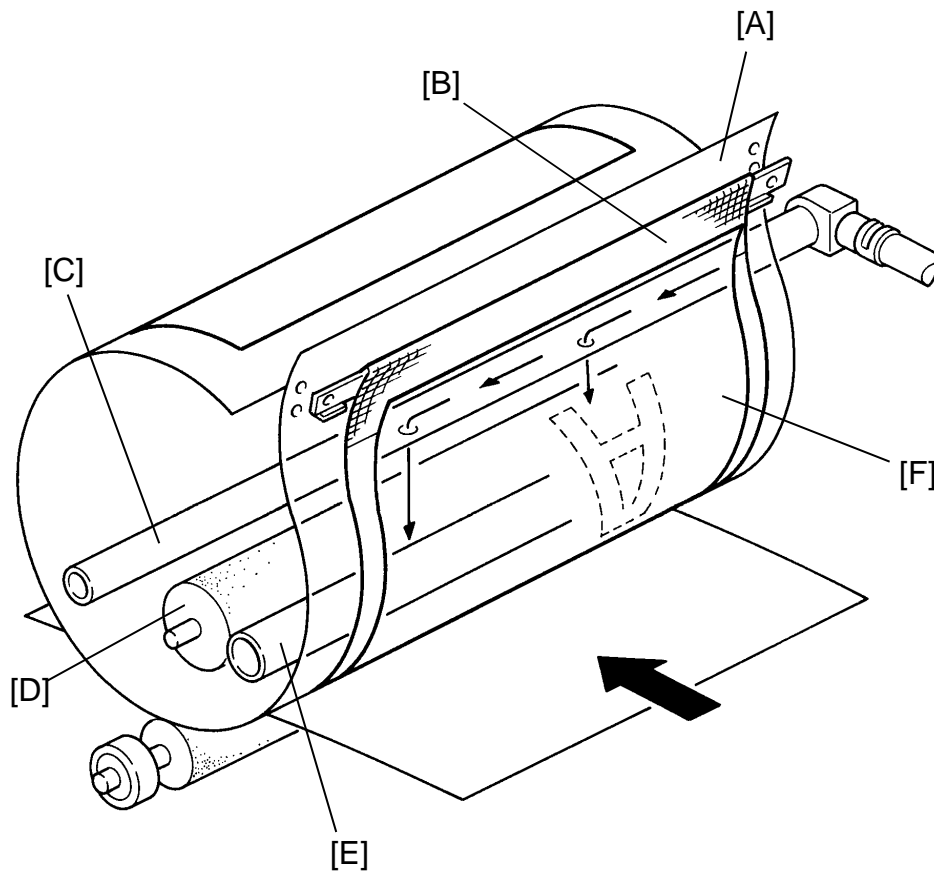
4.7 SIDE FENCE SLIDE MECHANISM



The paper table side fences [A] are installed on the shaft [B]. When the lever [C] is pinched, the stopper [D] is released from the shaft and either fence can be moved independently. By turning the dial [E], the shaft and the side fences move together side to side changing the paper position on the paper table. If the dial is turned clockwise, the fences move to the left.

5. DRUM

5.1 OVERALL



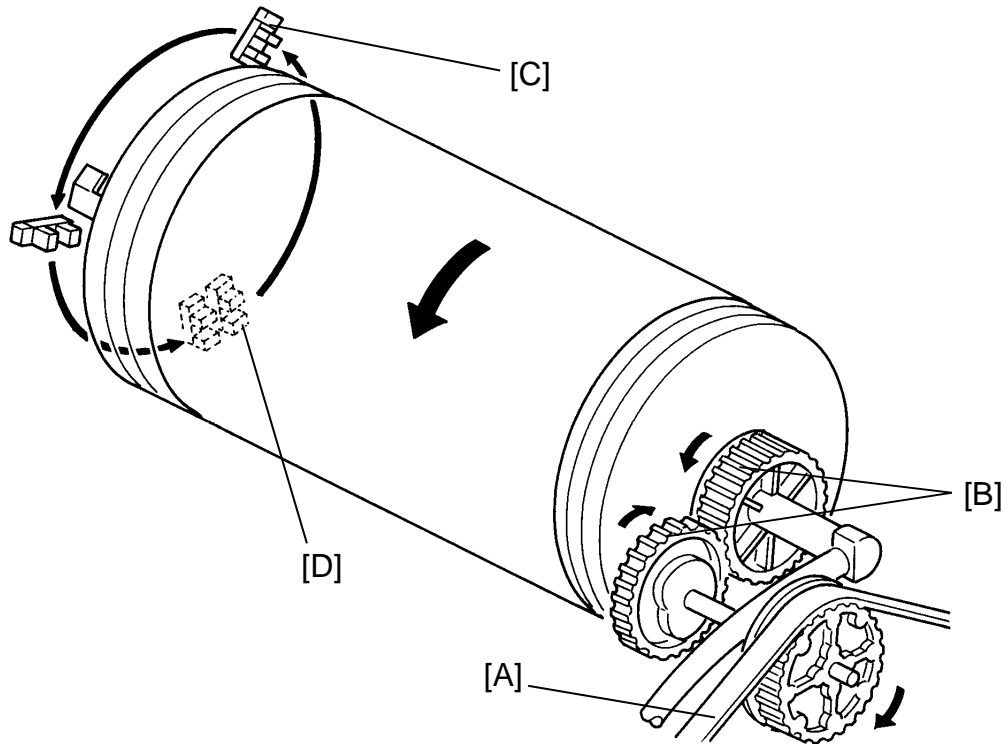
Detailed
Section
Descriptions

The drum consists of a metal screen [A] and a cloth screen [B].

The ink pump supplies ink from the ink cartridge into the drum through the drum shaft [C]. Ink is then spread evenly to the screens by the ink roller [D] and doctor [E] roller. The developed master [F] with the plastic coating removed from the image area allows the ink to flow through the exposed porous material.

The drum is driven by the main motor and turns only clockwise (from the operator side). The motor speed and the drum stop positions are controlled by monitoring the main motor encoder.

5.2 DRUM DRIVE MECHANISM



The drum is driven by the main motor (DC motor) through a timing belt [A] and gears [B]. The main motor has an encoder which sends pulses to the main PCB. The main PCB monitors the pulses and controls the drum speed and stop positions.

The drum has two stop positions as follows:

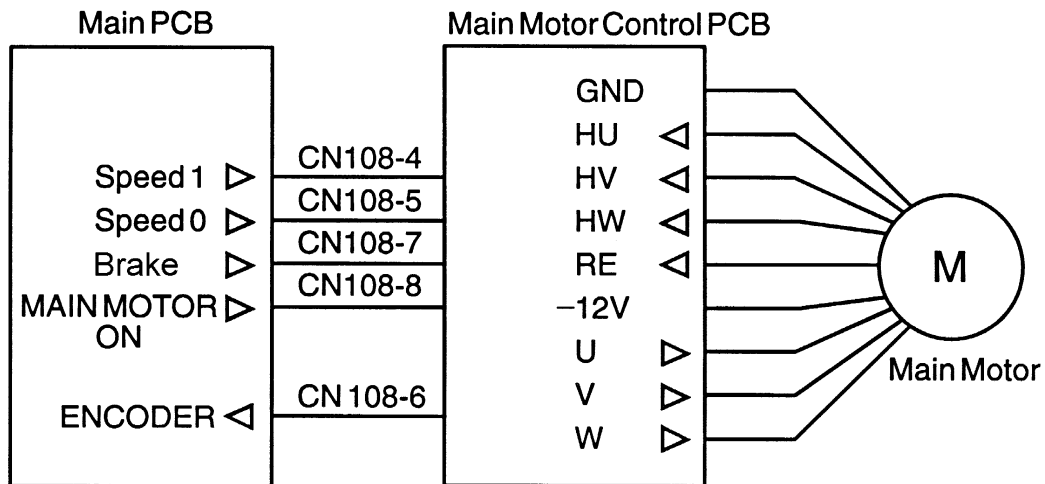
- 1) Master eject position/ Home position
- 2) Master feed position

These stop positions are determined by checking the feed start timing sensor [C]. The main PCB starts counting the main motor encoder pulses when the feed start timing sensor is actuated. The following pulse count numbers are assigned for drum stop timing.

- 1) 440 pulses for the master eject position
- 2) 64 pulses for the master feed position

When the drum is stopped at the master eject position, the master eject position sensor [D] is actuated. When the master eject operation is started, the main PCB confirms if the drum is at the master eject position by this sensor [D].

5.3 MAIN MOTOR CONTROL



Detailed
Section
Descriptions

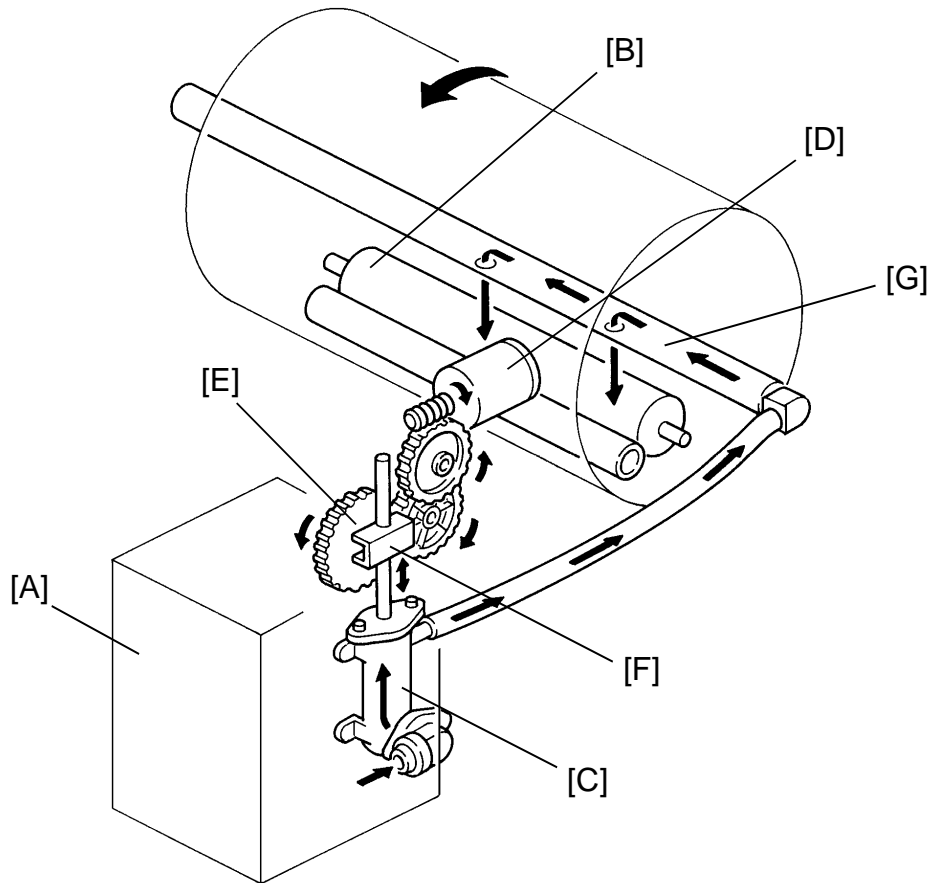
The main motor is driven by the main motor control PCB. The main PCB sends the speed signals (0 and 1), the main motor ON trigger, and the motor brake trigger to the main motor control PCB. According to the combination of two speed signals, the main motor control PCB can select on to of four possible main motor speeds.

The main motor speed is converted in half for the drum rotation by the gears and timing belt. The drum rotates at 30rpm while the main motor rotates at 60rpm. This lowest possible speed also is used for the master eject and feed operations. For the master wrapping process, the main PCB sends the main motor ON trigger as a pulse signal. As a result, the drum turns intermittently at 30rpm.

The main motor speed is maintained by the main motor control PCB which is monitoring the encoder pulses from the main motor.

CN108-4 (Speed 1)	L	L	H	H
CN108-5 (Speed 0)	L	H	L	H
Motor Speed	60 rpm	140 rpm	200 rpm	260 rpm
Drum Speed	30 rpm	70 rpm	100 rpm	130 rpm

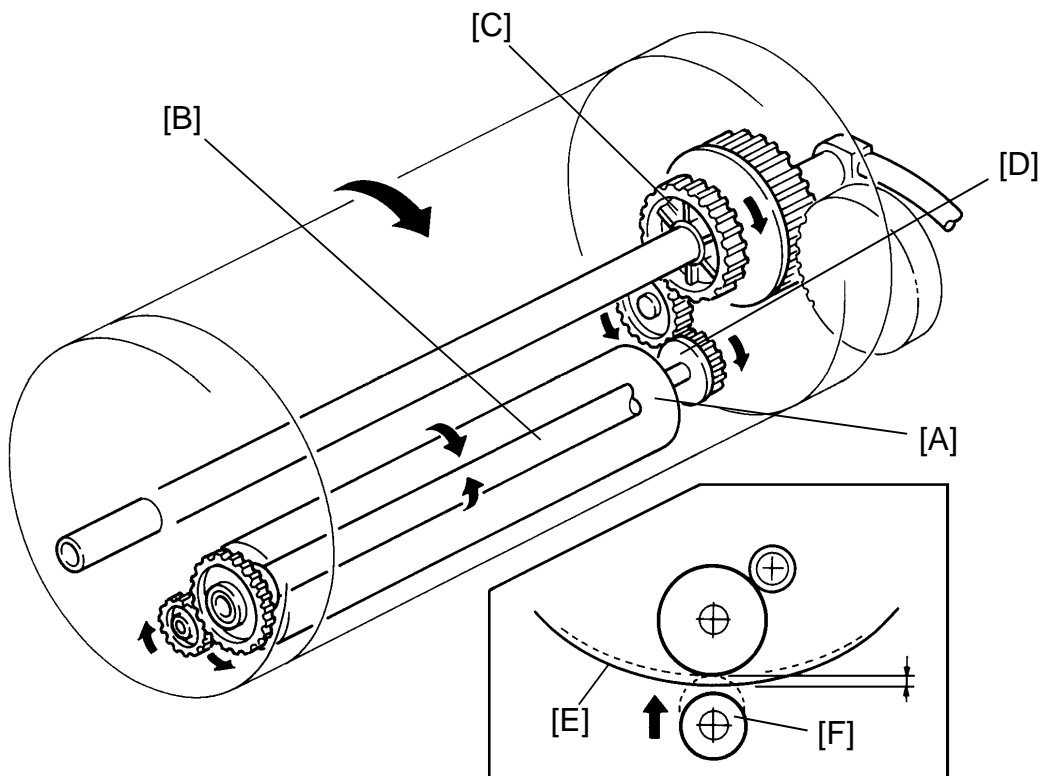
5.4 INK SUPPLY MECHANISM



Ink is supplied from the ink cartridge [A] to the ink roller [B] by a pump [C]. The ink pump is driven by the ink supply motor (DC motor) [D] through gears. There is a pin on the pump drive gear [E] which is coupled with the pin holder [F] on the pump piston shaft. This mechanism converts the gear rotating motion into the piston vertical alternating motion.

Two holes on the drum shaft [G] drop ink on to the ink roller [H].

5.5 INK ROLLER MECHANISM

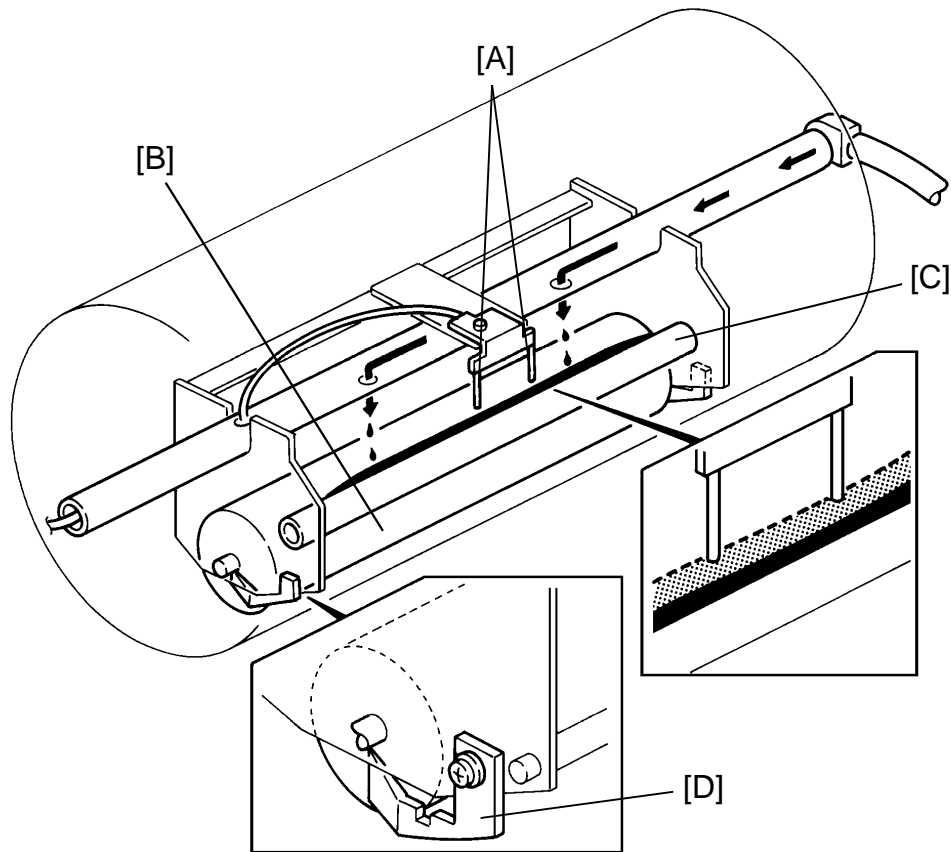


Detailed
Section
Descriptions

The ink roller [A] and the doctor roller [B] are driven by the gear [C] on the drum shaft. Ink supplied on the ink roller is squeezed by the doctor roller and an even thickness ink layer is applied to the ink roller. The ink drive gear [D] has a one-way clutch to prevent the ink roller from turning in the reverse direction when the drum is turned in the reverse direction manually.

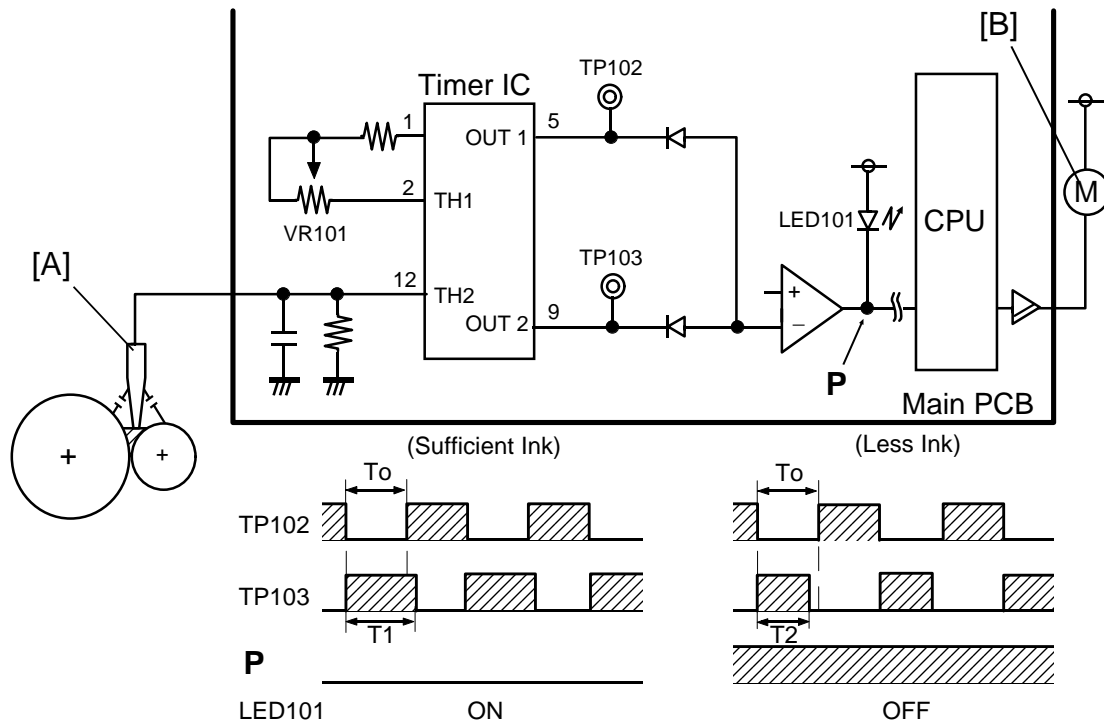
The ink roller only touches the screen [E] during printing. During the printing process, the ink on the ink roller is applied to the paper through holes in the screens and master. This happens while the drum screen and the master are held against the ink roller by the pressure roller [F] located underneath the drum.

5.6 INK SUPPLY CONTROL



The ink detection pins [A] work like the electrode of a capacitor and detect the capacitance between the detection pins and the ink [B] and doctor [C] rollers. This capacitance is different when the ink level is high and the pins touch ink, compared to when the ink level is low and the pins do not touch ink. By detecting the capacitance, the ink supply motor is controlled to keep the ink level.

The ink roller blade [D] is installed on both ends of the ink roller to scrape off the built-up ink on the ink roller edges.



A timer IC is used to detect the ink level. The IC produces two pulse signals. TP102 outputs the standard pulse signal, the standard pulse length T_0 is determined by the VR101. TP103 outputs the detection pulse. This pulse length is determined by the capacitance between the detection pins and ink and doctor rollers.

(Sufficient ink condition)

When the ink level is high and the pins [A] are touching the ink, the capacitance becomes large and increases the detection pulse length (T_1). When the detection pulse length is longer than the standard pulse length ($T_0 < T_1$), "P" becomes low and turns on the LED101. While the CPU is receiving the low signal at "P", the CPU recognizes that ink level is sufficient and does not turn on the ink supply motor [B].

(Less ink condition)

When the ink level is low, the capacitance is lowered and decreases the pulse length (T_2). When the detection pulse length is shorter than the standard pulse length ($T_0 > T_2$), "P" becomes high and turns off the LED101. While the CPU is receiving the high signal at "P", the CPU recognizes that the ink level is low and turns on the ink supply motor to supply ink until the signal at "P" becomes low.

(Ink End Condition)

If the less ink condition is detected continuously for more than 25 seconds during the print cycle, the CPU stops the printing process and turns on the Ink End indicator.

When printing starts in the less ink condition, the main motor keeps turning, and the ink supply motor turns on until the ink level returns to a sufficient level. If the ink returns to a sufficient level within 25 seconds, the machine starts the printing operation. If not, the machine lights the Ink End indicator.

A beeper sounds intermittently while the machine is idling during the ink supply.

The machine has a forced ink supply mode. When the Reset key is pressed while holding down the "0" key, the machine starts the ink supply operation. This operation continues for 50 seconds and stops automatically when ink reaches a sufficient level. If ink is not needed and the process was commenced it will proceed normally but the ink supply motor will not operate.

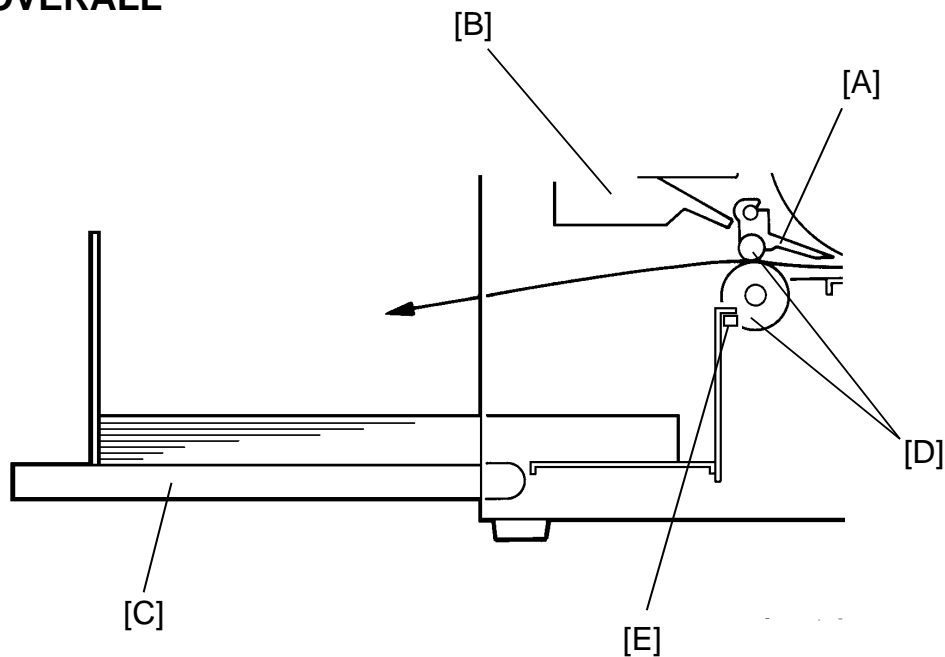
(To Disable Ink Detection Circuit)

The ink detection circuit can be disabled if the main switch is turned on while both the Auto Cycle key and the Reset key are pressed. If this mode is accessed, prints can be made even though the ink detection pin is not in contact with the ink on the ink roller (see page 2-26 Ink Supply Control). When the main switch is turned off, this condition is reset to normal operation.

This function serves to remove the ink inside the drum.

6. PAPER DELIVERY SECTION

6.1 OVERALL

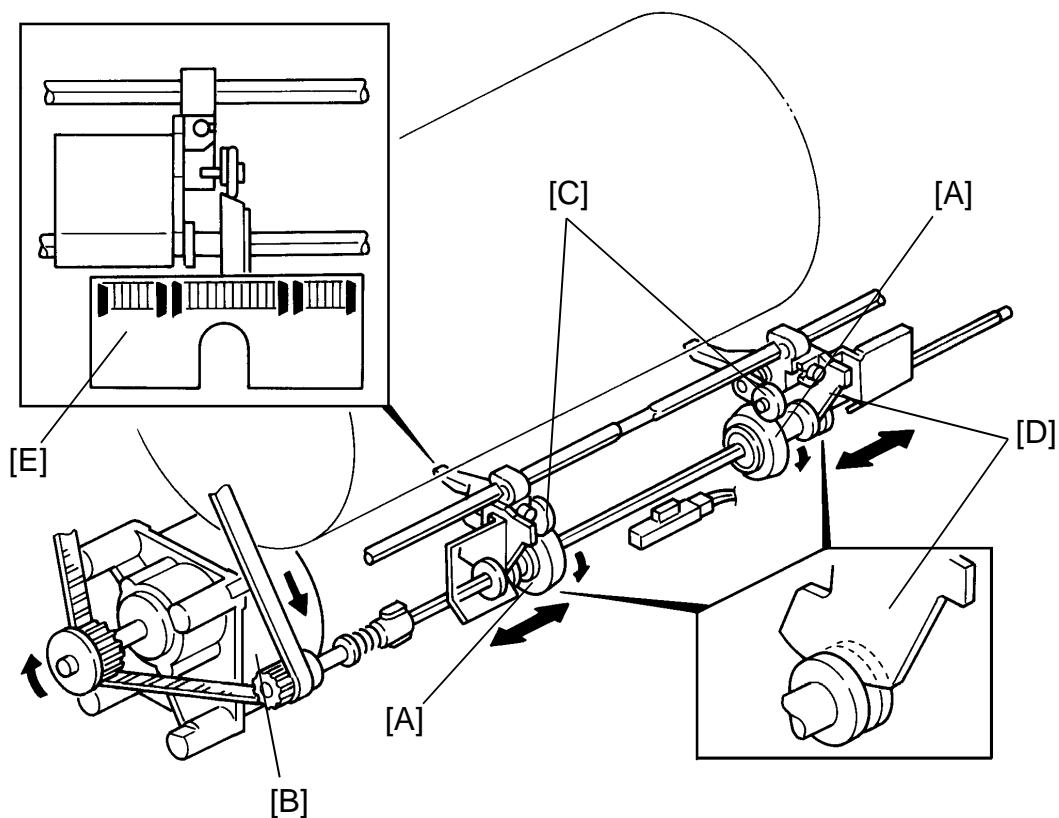


Detailed
Section
Descriptions

The exit pawls [A] and the air knife [B] separate the paper from the drum. The paper is delivered to the paper delivery table [C] by the upper and lower exit rollers [D].

There is a photoreflexor type photosensor mounted between exit roller assemblies [E] to detect paper jams.

6.2 PAPER DELIVERY ROLLER

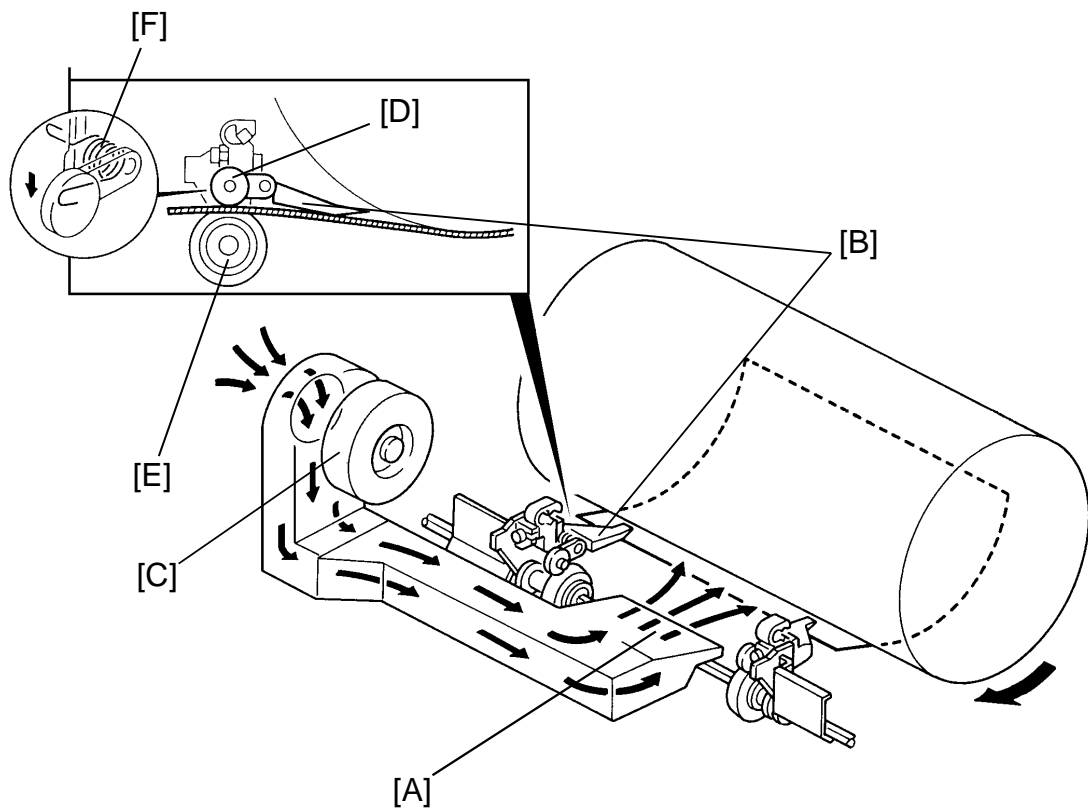


The lower exit rollers [A] are driven by the main motor [B] through the timing belt. The upper exit rollers [C] and the lower exit rollers catch the paper and transport it to the delivery table.

The lower exit roller are controlled by green plastic guide plates [D] which are mounted to the exit pawl. This allows the upper and lower exit rollers to move together.

Each roller position should be adjusted according to the paper position on the paper table, so that the upper and lower exit rollers catch 5 mm inside of the paper edge to transport it. The paper size indicator [E] shows the standard delivery roller position for each paper size.

6.3 EXIT PAWL/AIR KNIFE



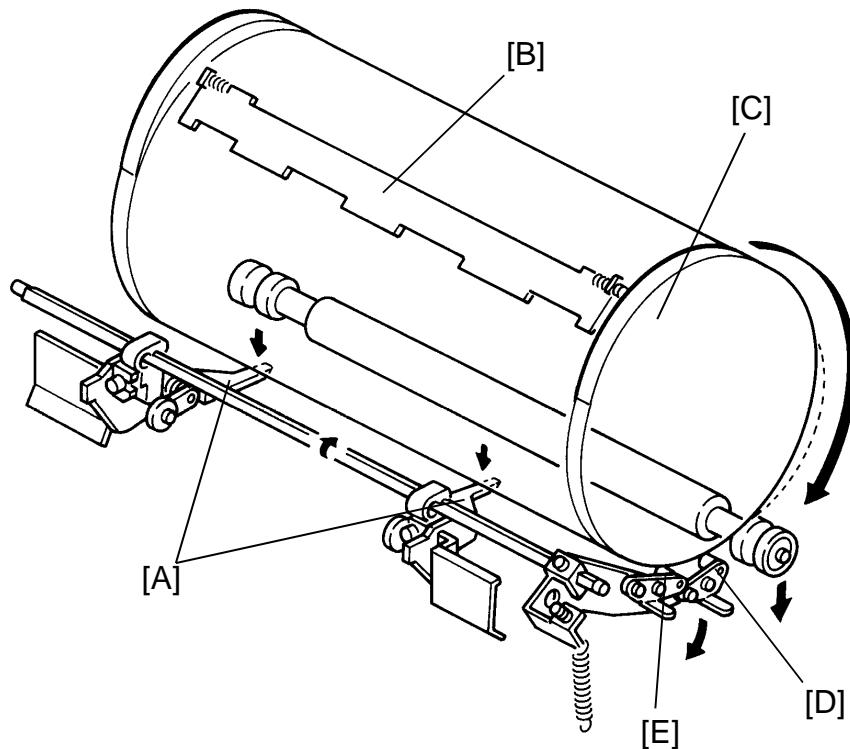
Detailed
Section
Descriptions

The air from the air knife nozzle [A] and the exit pawls [B] separate paper from the drum.

The air knife motor starts blowing air when the print start key is pressed or master cutting is completed. The paper passes under the exit pawls and is caught by the exit rollers. The motor stops when the last sheet of paper is fed out.

The upper exit rollers [D] are installed on the exit pawls. They are pushed against the lower exit rollers [E] by tension of the springs [F].

6.4 EXIT PAWL RELEASE MECHANISM

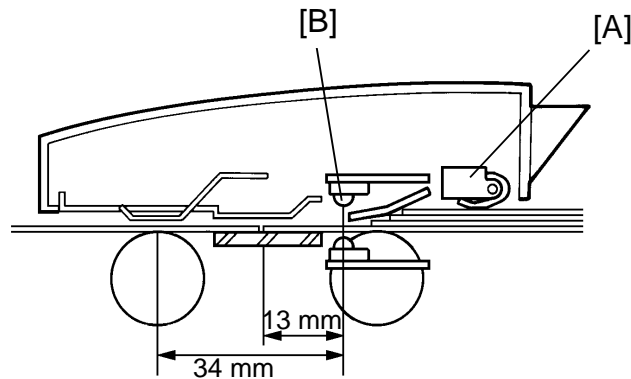



The exit pawls [A] move away from the drum when the master clamber [B] approaches the pawls. This is controlled by the cam [C] installed on the front drum flange and the two cam followers [D and E] installed on the exit pawl shaft. The two cams allow enough time to move the pawls away from the drum.

While the cam followers are not on the top of the cam, the distance between the pawls and the drum is very small to prevent paper wrap jams. At this time, the distance is determined by the stopper, and the cam followers are not in contact with the cam. However, when the master clamber approaches the exit pawls, the pawls must be moved away from the drum to avoid contact and damage against the master clamber. As the master clamber approaches the exit pawls, the cam moves into contact with the cam follower pushing them down. This rotates the cam follower arm, and the pawl shaft clockwise, to move the pawls away from the drum. When both cam followers are out of contact with the cam, the pawls move back towards the drum to their normal position.

7. JAM DETECTION

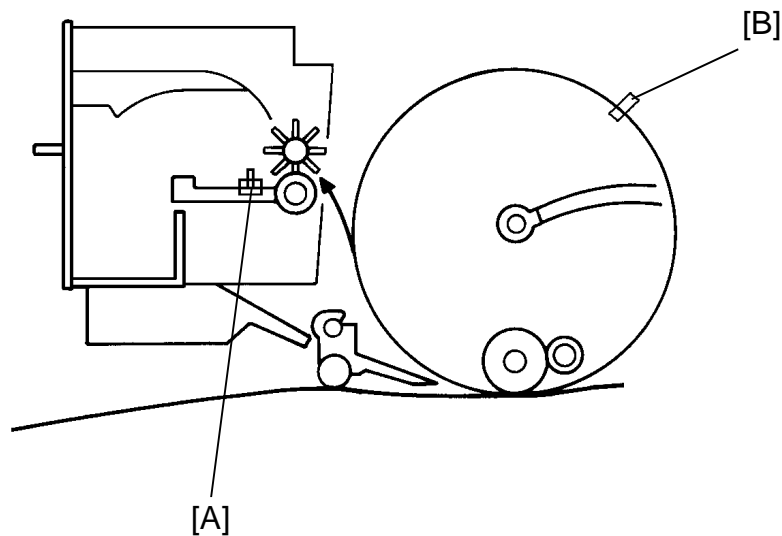
7.1 ORIGINAL JAM DETECTION



Original jams are detected by the original set sensor [A] and the original registration sensor [B]. The misfeed indicator ( + A) lights with the following conditions:

- 1) When the main switch is turned on, if the original registration sensor is interrupted.
- 2) When the original set sensor is actuated, if the original registration sensor does not detect the original leading edge within 3 seconds after the Master Making key is pressed.
- 3) If the original registration sensor does not detect the trailing edge of the original within 4 seconds after the original leading edge is transported 355.6 mm from the original registration sensor.
- 4) If the original stops interrupting the original registration sensor after the stop key is pressed while scanning.

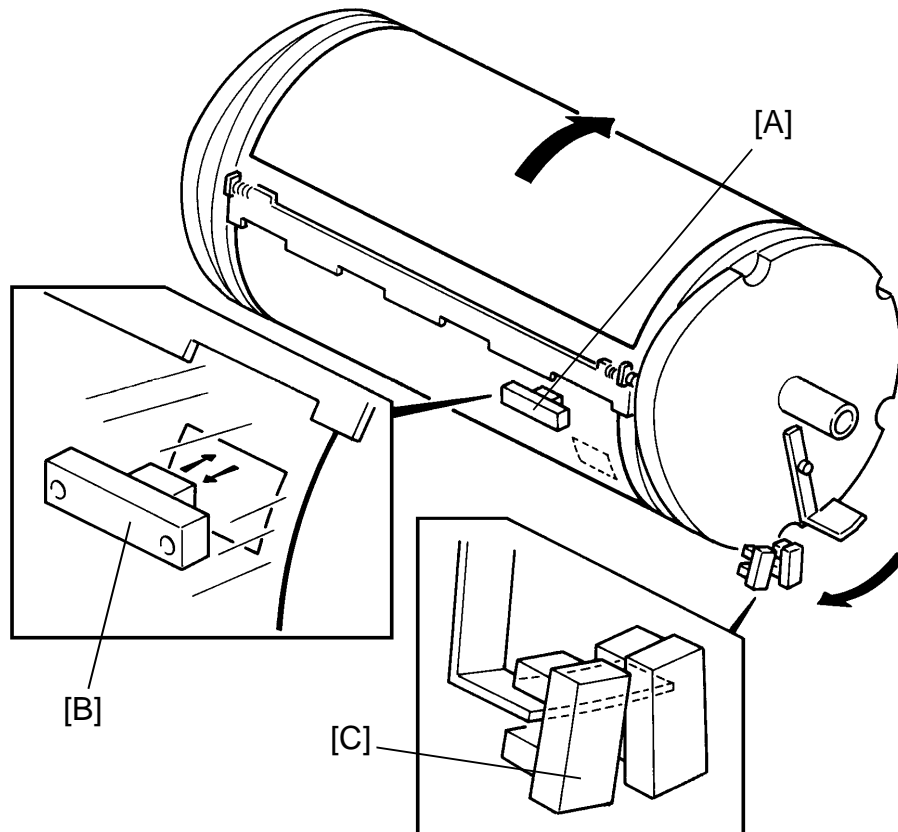
7.2 MASTER EJECT JAM DETECTION




The master eject jams are detected by the master eject sensor [A]. The misfeed indicator ($\text{g}\Lambda\text{r}+\text{F}$) lights in the following conditions:

- 1) If the master eject sensor is actuated when the main switch is turned on.
- 2) If the master eject sensor is not actuated within 0.3 seconds after the drum started turning to feed the master into the master eject box.
- 3) If the master eject sensor is not actuated when the drum makes a half turn and passes the feed jam timing sensor [B]. This is the case when the picked up master leading edge is pulled back to the drum and the master remains on the drum. (The jam indicator lights after the drum returns to the home position.)
- 4) If the master eject sensor is actuated when the pressure plate is returned to the home position. This is the case when the master trailing edge sticks on the pressure plate and is pulled back to the master eject rollers.

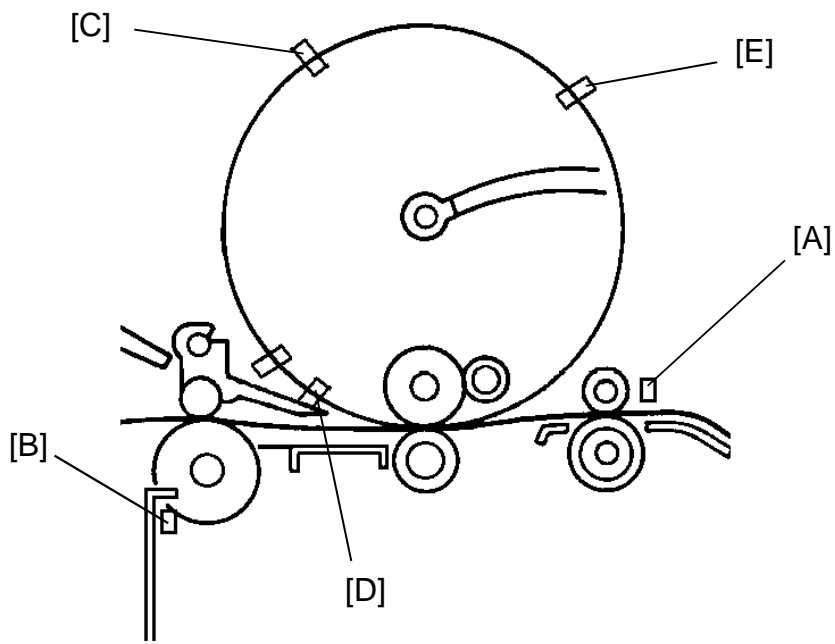
7.3 MASTER FEED JAM DETECTION



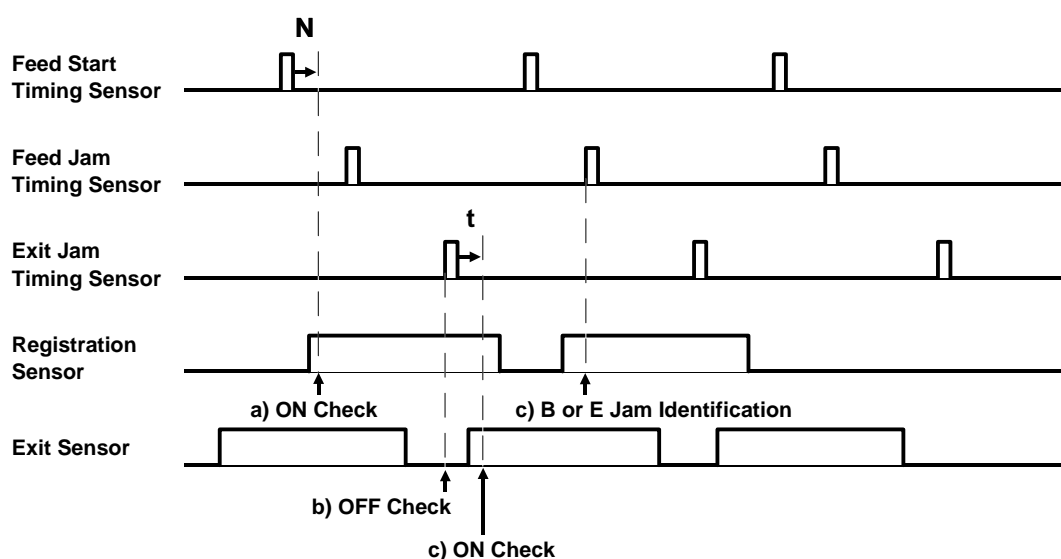
There is no master feed sensor on the master paper feed path to detect master feed jams. The master feed jam is detected by the drum master sensor [A] which detects the presence of a master on the drum.

When the drum is stopped at the master exit position prior to the start of printing. After master making, if the master sensor [B] does not detect the master on the drum, the master misfeed indication ( + C) will be displayed on the operation panel. (The master eject position sensor [C] is used to confirm that the drum is positioned at the master eject position.)

7.4 PAPER FEED JAM DETECTION



Paper jams are detected by the registration sensor [A] and the exit sensor [B]. Jam detection timing is determined by the drum position sensors and the main motor encoder. The timing chart on the next page shows the jam detection timing.



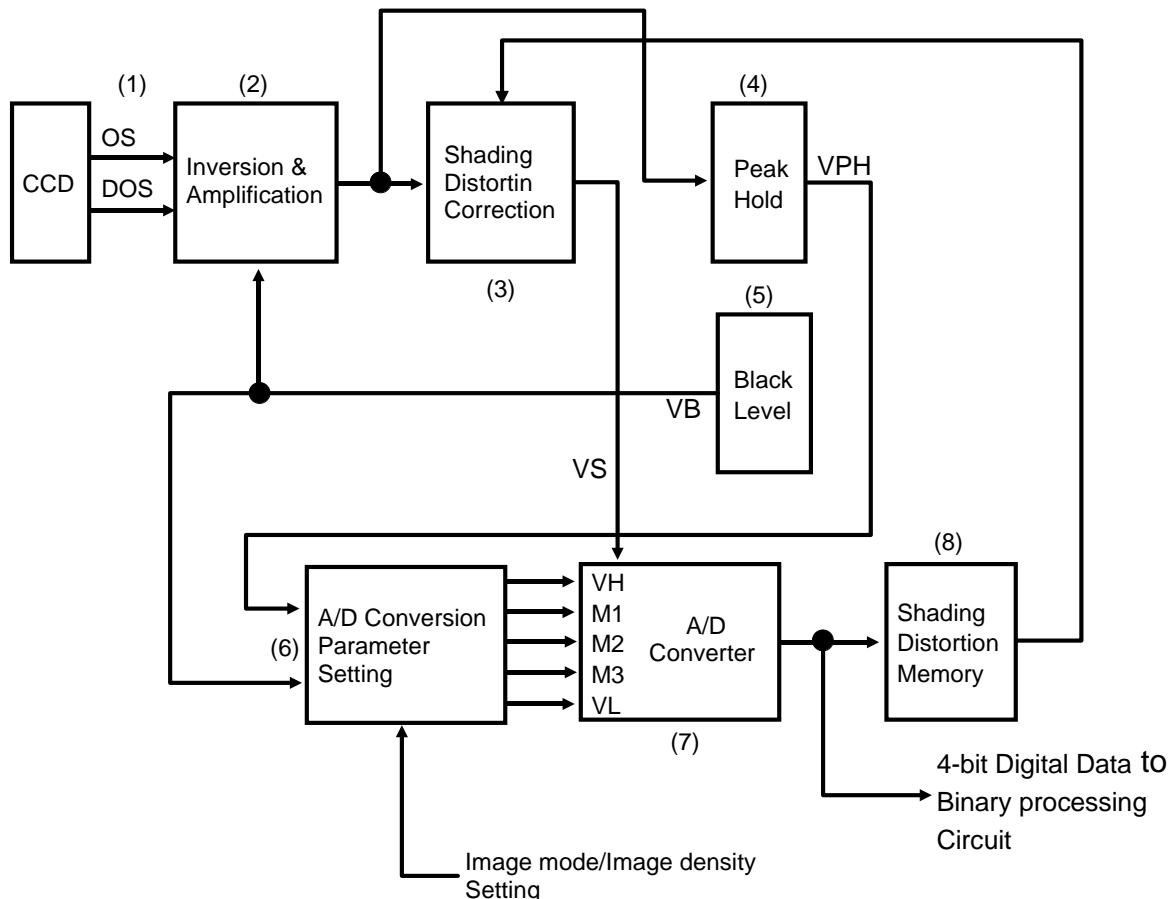
- a) When the CPU counts a determined number of pulses (N) from the main motor after the feed start timing sensor [C] is actuated, if the registration sensor does not detect the paper, B + light.
- b) When the exit jam timing sensor [D] is actuated, if the exit sensor remains activated, G + light.
- c) When the determined time (t) (this time depends on the drum speed) is counted after the exit jam timing sensor is actuated, if the exit sensor is not activated, the machine detects a paper jam. If this jam condition is detected, the main PCB stops the next paper from being fed. When the feed jam timing sensor [E] is actuated:
 1. If the registration sensor is activated, a 2nd feed failure is detected. (B +)
 2. If the registration sensor is not activated, a paper wrap jam is detected. (E +)

8. IMAGE PROCESSING

Image processing resolves how to transform an optical image of a continuous line, made up of an infinite number of color shades, into 2592 lined-up dots (pixels), each of which is black or white.

There are two basic sub-processes: first A/D conversion, i.e. converting an analog image to *4-bit digital data* representing 16 shades of gray; second binary processing, i.e. transforming that digital data into black or white pixels.

8.1 A/D CONVERSION

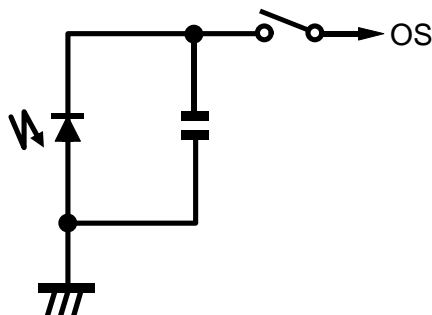


This block diagram shows the A/D conversion process (A/D= Analog to Digital). The analog signal generated from the CCD is inverted and amplified. Then the analog signal is converted into a 4-bit digital signal and is sent to the binary processing circuit.

The following sections (8.1.1 - 8.1.8) will give a brief explanation of the various steps in the A/D conversion process.

(1) CCD

The light reflected from the original exposes the CCD (Charge Coupled Device) which can read one complete scan line at a time. The circuit of each element in the CCD is shown at the right. The CCD has 2592 effective elements. The light reflected from the original is sensed by a photodiode. A capacitor stores the electrical charge corresponding to the light's intensity.



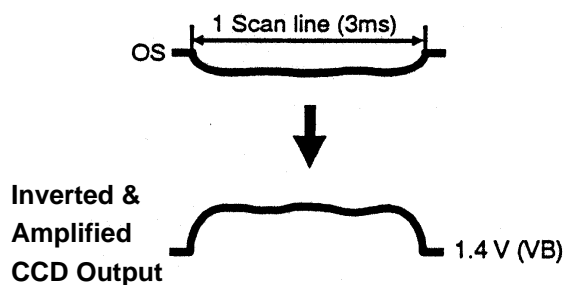
The electrical charges from the CCD elements are sent to the A/D conversion PCB one after the other (OS signal).

The CCD always outputs a compensation data signal (DOS signal) with the OS signal. This DOS signal is used for the inversion and amplification described below.

(2) Inversion and Amplification

The CCD output is inverted and amplified.

To remove electrical noise, the *difference* between the OS signal and the DOS signal is amplified. Even if electrical noise intrudes into the power source of the CCD, it does not effect the amplified signal, because the noise affects both signals identically. Therefore, subtracting the DOS signal from the OS signal will cancel the noise out.



The amplification ratio can be changed by turning VR201.

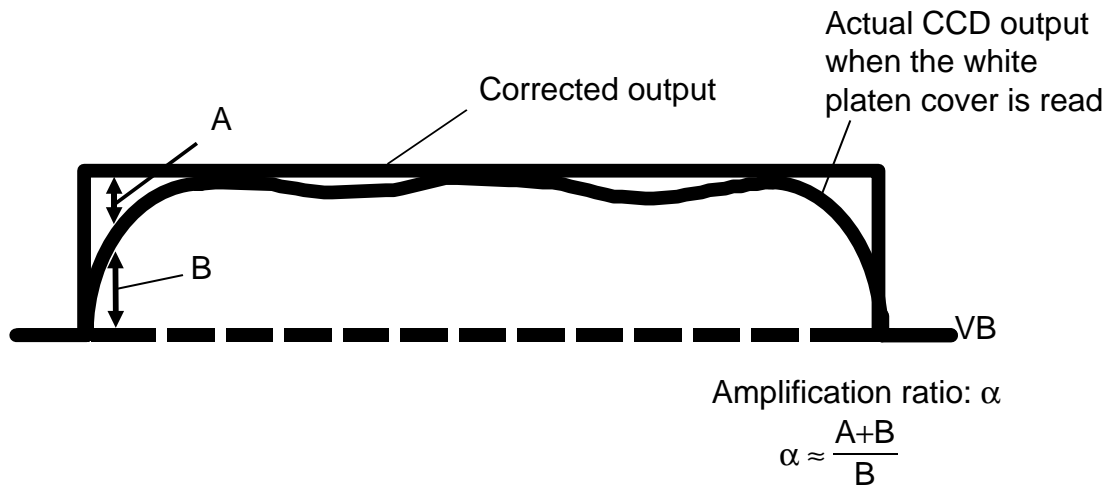
(3) Shading Distortion Correction

The image data of one main scan line sent from the CCD does not exactly represent the line of the original image, because of the following reasons:

- 1) Loss of brightness towards the ends of the fluorescent lamp and the edge of the lens,
- 2) Variations in sensitivity among elements of the CCD,
- 3) Distortions of the light path.

These distortions are corrected by applying individual amplification ratios (α) to the output of each CCD element. The amplification ratio of each element is determined so that all the CCD outputs are amplified to match the highest voltage from the platen cover data when the white platen cover is scanned,.

When the main switch is turned on, the scanner scans the white platen cover 5 times. The white platen covers data which corresponds to each CCD element is stored as 4-bit digital data in the shading distortion memory circuit and used for the shading distortion correction.



(4) Peak Hold (VPH)

Before the analog signal can be converted to digital data, the machine must know the high and low bounds that match white and black. These bounds are voltage values.

The low bound is called the black level (VB, see pg. 2-41). The high bound is called the peak hold value, or VPH.

When the analog signal is digitized, VB and VPH will serve as references to determine how the CCD output will be distributed over the sixteen different 4-bit values.

a) Peak Hold for the Shading Distortion Memory

When the main switch is turned on, the exposure lamp turns on and the white platen cover is scanned 5 times. The white peak value from the platen cover scan is held in the peak hold circuit and used to determine the amplification ratio (α) of the shading distortion memory.

b) Original Background Peak Hold

The peak hold from the platen cover scans is erased before original scanning starts. After original scanning starts, this circuit holds the whitest image voltage of the 43 mm (512 pixels) width in the middle of the scan line.

The highest value sensed during an original scan is called the original background peak hold. It does NOT always correspond to a pure white original, but it will serve to establish the whitest part of the print image. In other words it will turn a dark background white.

Once a peak hold is recorded, it does not change until a higher (whiter) value is scanned, or until the next original is scanned.

(5) Black level (VB)

This circuit always outputs 1.4V. This black level voltage is used as a reference for A/D conversion and as the lower limit of the amplified CCD output.

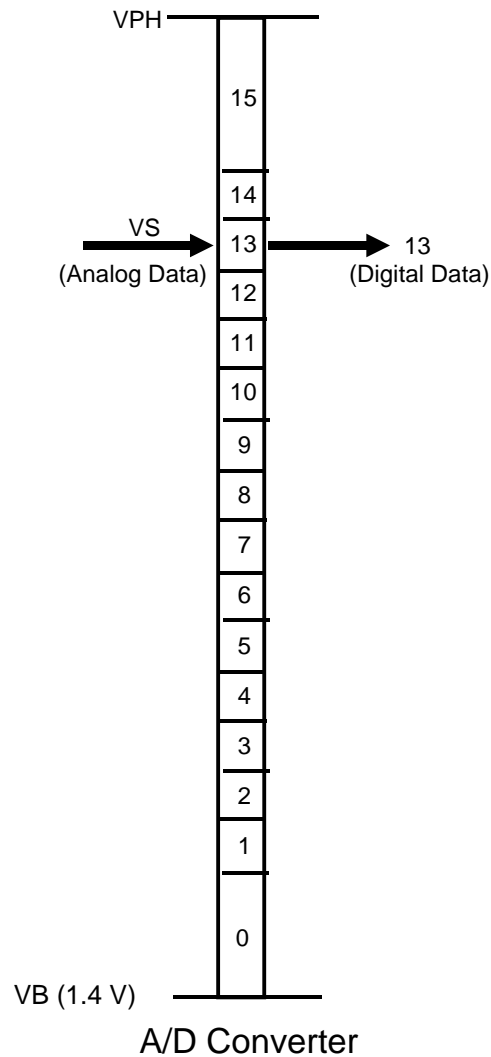
(6) A/D Converter

The analog data VS (amplified CCD outputs) is changed into 4-bit digital data. The 4 bits of data represent a number between 0 and 15, for a total of 16 steps.

In the A/D conversion circuit, the difference between VH and VL (see pg. 2-43) is divided into 16 steps. Each step corresponds to a VS voltage level.

The digital data from the analog image data (VS signal) is based on these 16 steps.

For example, the amplified CCD output (VS), whose level is as shown at right, is changed into "13" (digital data) to be sent to the binary processing circuit.



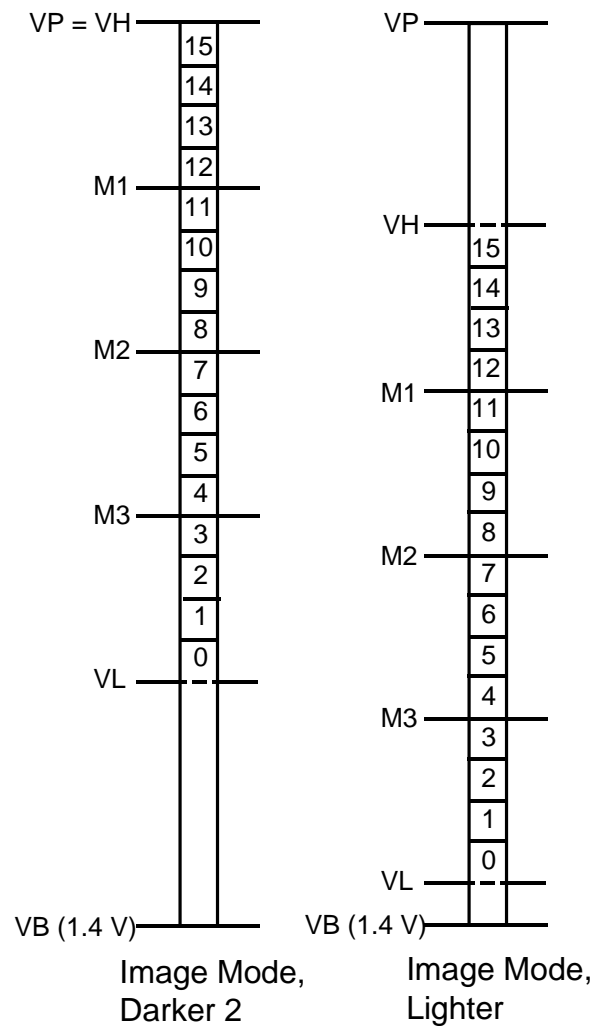
(7) A/D Conversion Parameter Setting

Process		Parameter	VH (%)	M1 (%)	M2 (%)	M3 (%)	VL (%)
Shading Distortion Memory			100	86.5	73.0	59.5	46.0
Image Setting	Line Mode	Lighter	74.0	57.0	40.0	23.0	6.0
		Normal	100	76.5	53.0	29.5	6.0
		Darker 1	100	79.8	59.5	39.3	19.0
		Darker 2	100	84.5	69.0	53.5	38.0
	Photo Mode	Lighter	70.0	36.6	19.6	11.4	7.0
		Normal	80.0	43.4	24.8	15.8	11.0
		Darker 1	85.0	47.9	29.0	19.9	15.0
		Darker 2	92.0	52.3	32.0	22.3	17.0

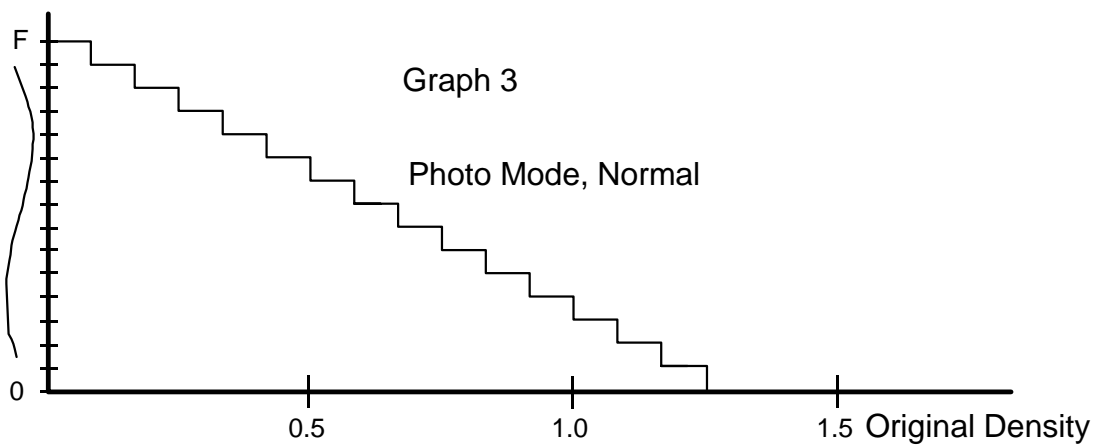
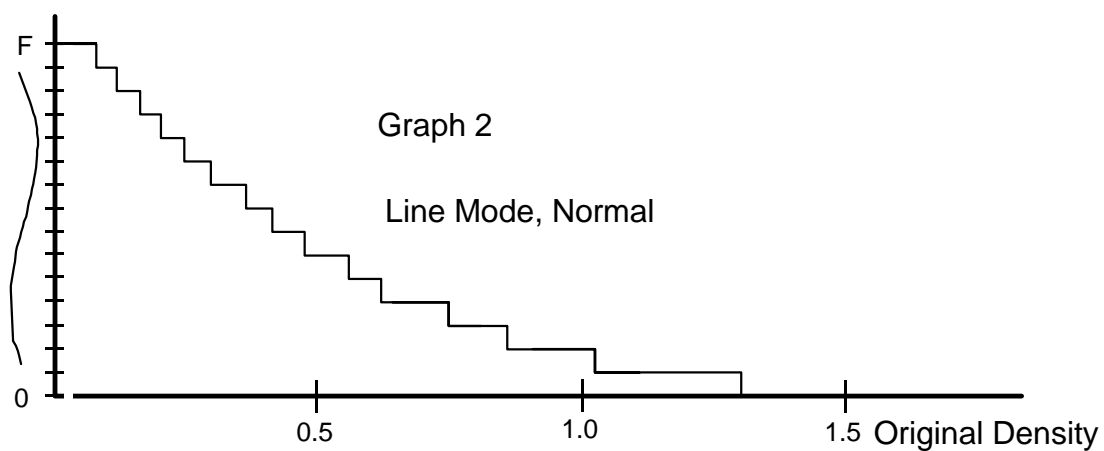
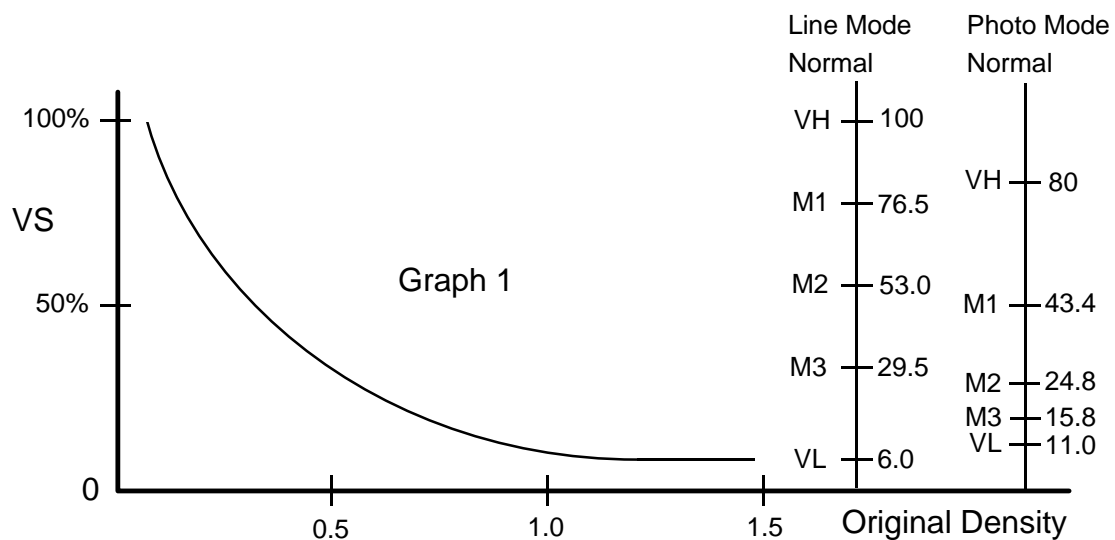
The A/D conversion parameters (VH, M1, M2, M3 and VL) decide how the the VS signal is distributed over 16 steps. The parameters are determined according to VPH, VB, the image mode setting, and the image density setting.

VH and VL are the upper and lower image density bounds. If a darker image setting is selected, VH and VL increase (as shown at right). M1, M2 and M3 are set to improve image quality in the photo mode.

The above table shows the ratio of VPH (100%) and each parameter at various image mode settings (deciding the VB at 0%). The voltage between each parameter is divided into further 4 steps, thus the voltage between VH and VL is divided into 16.



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As shown in Graph 1, the relationship between the original density and VS (amplified CCD output) is not linear due to CCD characteristic.

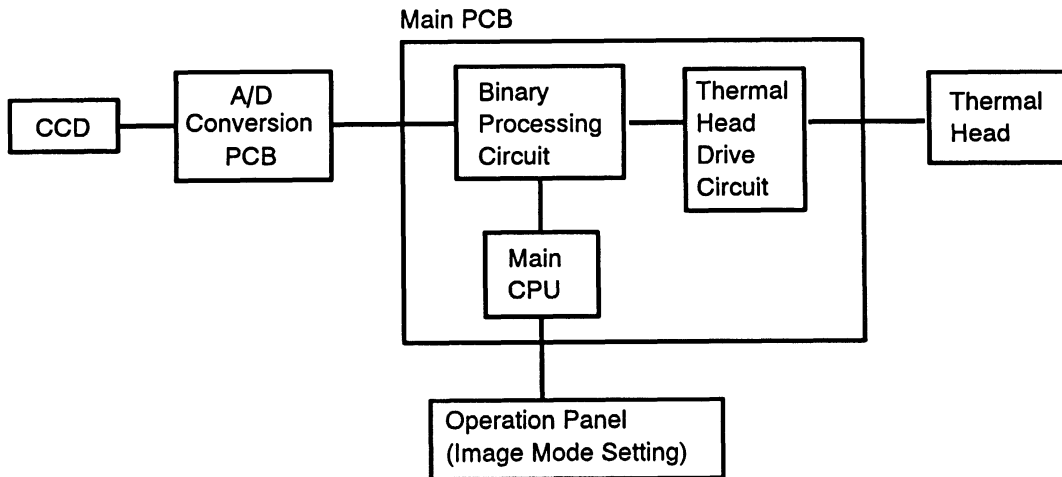
In the line mode, M1, M2, and M3 are set so that the distance between each of them is equal, and the relationship between the original density and the output digital data are as shown in graph 2.

In the photo mode, M1, M2, and M3 are set so that there are more steps in the darker area (low sensitivity area). This improves the quality of the gradation. (Refer to (3) Shading Distortion Correction.)

(8) Shading Distortion Memory

The amplification ratios (α) which corresponds to each CCD elements are stored as 4-bit digital data in the shading distortion memory circuit and used for the shading distortion correction.

8.2 BINARY PROCESSING



Binary processing resolves how to transform a line of "gray" pixels (the 4-bit digital data from A/D conversion) into a line of black and white pixels in such a way as to preserve the quality of the image.

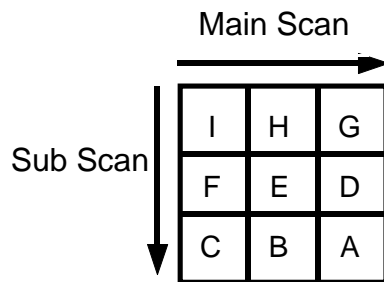
The binary processing circuit produces 1-bit data (white or black pixels) from the 4-bit output of the A/D converter, and sends it, as a serial signal to the thermal head drive circuit. The binary process is different between the line mode and the photo mode.

- 1) Line Mode: MTF (Modulation Transfer Function) Correction
- 2) Photo Mode: Dither Processing and Edge Emphasis Processing (Edge Emphases Processing is selected only when the DIP-SW 101-6 is turned on.)

8.2.1 MTF Correction

When the original image is converted to electrical signals by the CCD, the contrast is reduced. This is because neighboring black and white parts of the image influence each other due to lens characteristics. This phenomenon is typical when the width and spacing of the black and white areas are narrower.

MTF correction counters this phenomenon and emphasizes image detail. The value of a target pixel is modified according to the value of surrounding pixels. The modified data is compared to the threshold level. This determines if the pixel is to be black or white.



$$E_2 = 2E - 1/2(D + F) \text{ ----- Main Scan Data Modified}$$

$$E_1 = 2E - 1/2(B + H) \text{ ----- Sub Scan Data Modified}$$

The modified data is compared to a threshold level to determine if the pixel is black or white.

$$\text{Modified Data } E_2 \geq 8.0 \text{ or Data } E_1 \geq 8.0 \text{ ----- Black}$$

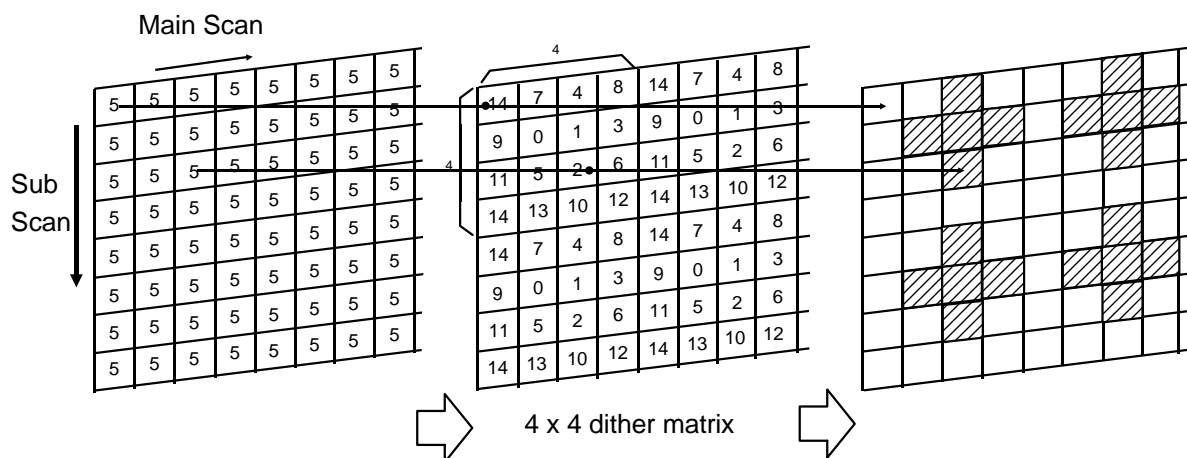
$$\text{Modified Data } E_2 < 8.0 \text{ and Data } E_1 < 8.0 \text{ ----- White}$$

8.2.2 Dither Processing

A dither matrix is made of 4 x 4 pixels and contains 16 different threshold levels for the locations which correspond to 16 pixels of the original image. Each pixel data (E_n) from the A/D conversion circuit is compared with the corresponding threshold level (V_{thn}) in the dither matrix. Then each pixel data is converted to either black or white depending on whether the image data is greater or less than the threshold level.

$E_n > V_{thn}$ Black

$E_n \leq V_{thn}$ White



4-bit pixel data to be read
 Example: All pixels are at 5.

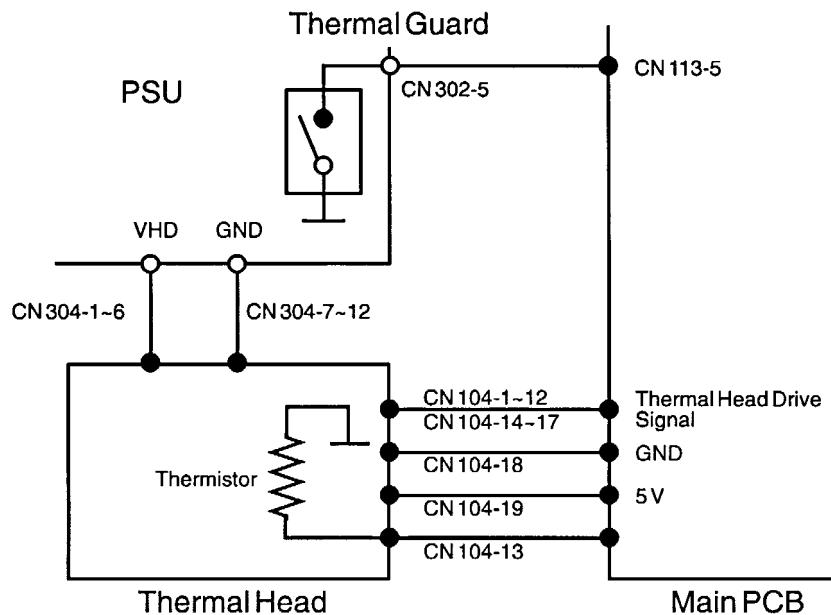
Threshold level of the dither matrix (number shows each V_{thn}).

Image reappearance (shaded pixels are black, showing the pixels with values below the threshold)

8.2.3 Edge Emphasis Processing in the Photo Mode

In the photo mode, if characters are processed using the dither method, they will be difficult to be read due to the distorting nature of the process. To counter this, when the density difference between a pixel and surrounding pixels is greater than a specified level, the surrounding pixel data is processed using MTF instead of the dither process.

8.3 THERMAL HEAD



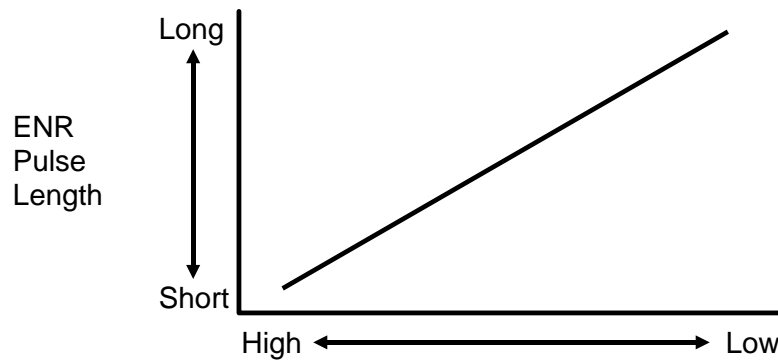
8.3.1 Thermal Head Control

The thermal head has heating elements at a density of 300 DPI. The thermal heating elements melt the over-coating and polyester film layers of the master according to the image signal for each pixel.

The Power Supply PCB applies power (VHD) to the thermal heating elements. The power source varies from one head to another since the average resistance of each element varies. Therefore, when the thermal head or Power Supply PCB is replaced, it is necessary to readjust the applied voltage with the particular value indicated for each thermal head.

The energy applied to the thermal heating elements is determined by the length of time (t) at which power is applied.

The time depends on the thermal head temperature which is detected by the thermistor on the thermal head. If the temperature is higher, the time (t) will be shorter.



The time(t) is determined when the Master Making key is pressed, and it is kept until the master making is finished.

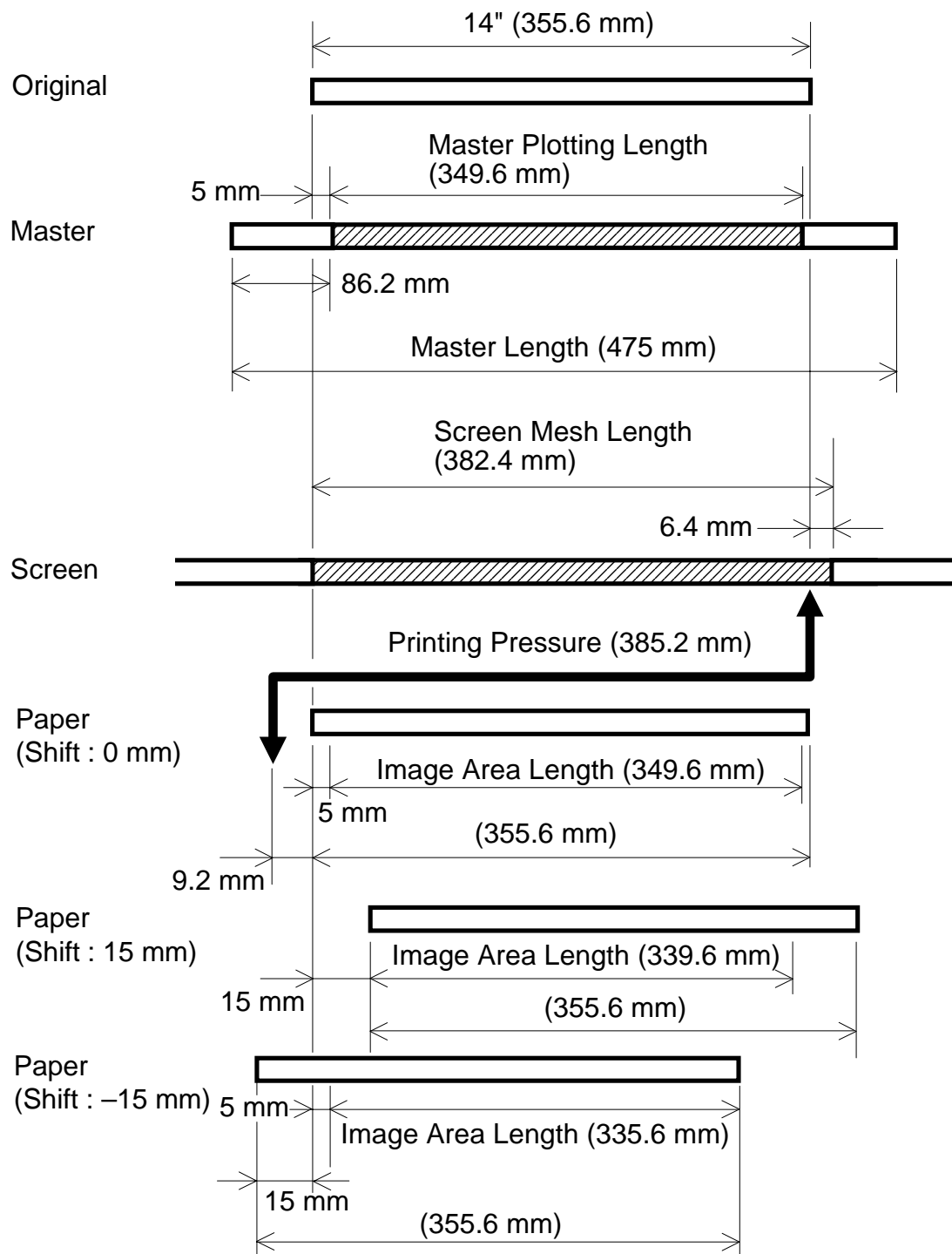
8.3.2 Thermal Head Protection

The thermistor on the thermal head and a thermal guard (a thermostat) on the PSU are used for thermal head protection. This prevents the thermal head and power supply unit from overheating when continuously processing a solid image. The CPU detects the abnormal condition when the Master Making key is pressed, and lights the SC code on the operation panel as follows:

Detecting Component	Conditions	SC Code
Thermistor	Over 54°C	E – 04
Thermistor	Under – 20°C (Thermistor open)	E – 09
Thermal Guard	Over 85°C	E – 08

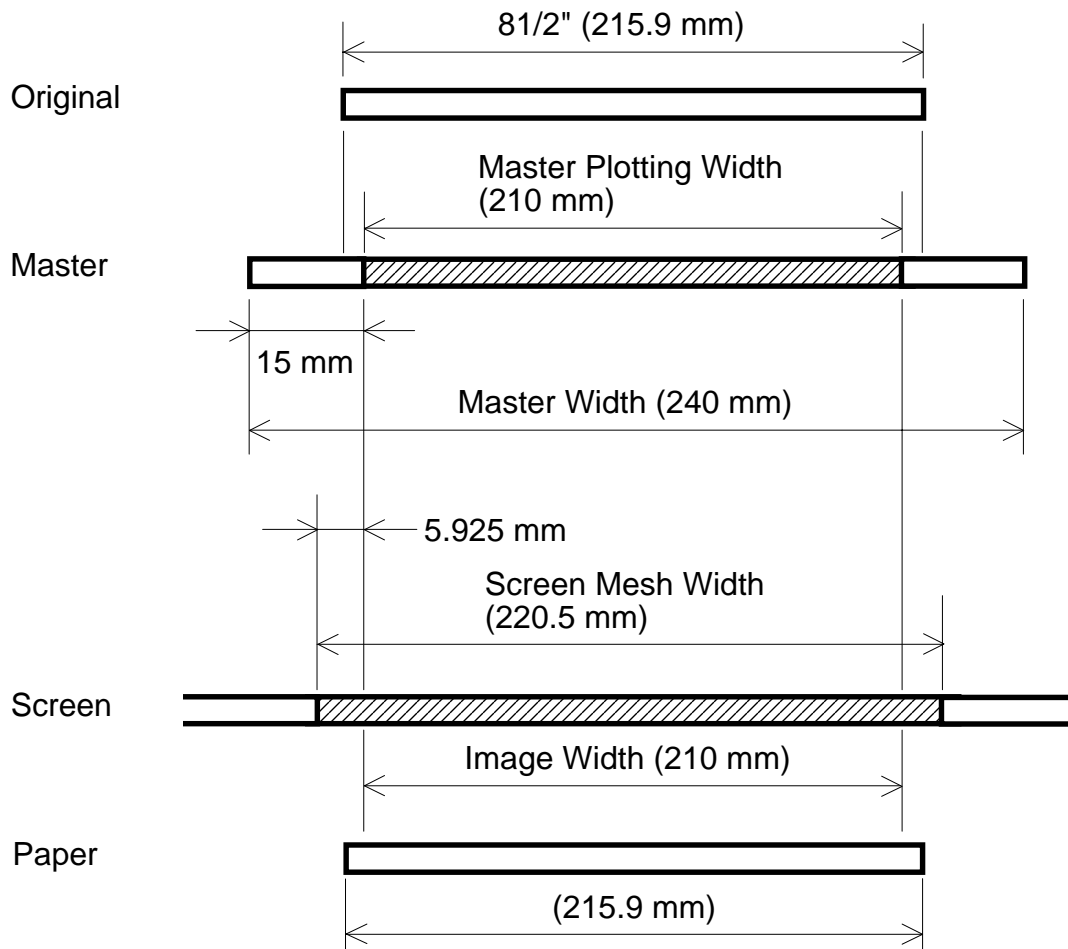
9. MASTER PLOTTING AND PRINTING AREA

1. Length



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2. Width

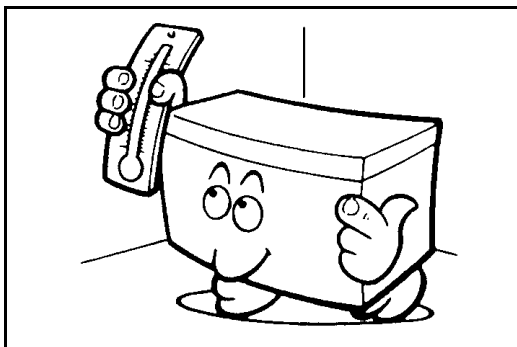


INSTALLATION

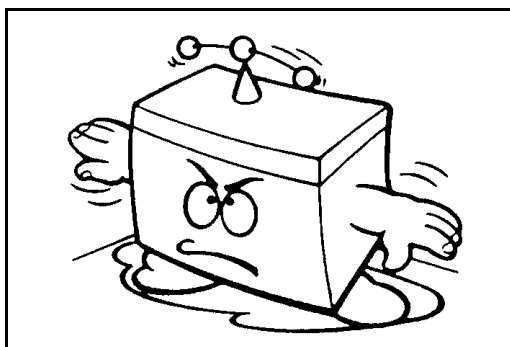
1. INSTALLATION REQUIREMENTS

The installation location should be carefully chosen because the environmental conditions greatly affect the performance of the machine.

1.1 OPTIMUM ENVIRONMENTAL CONDITION:



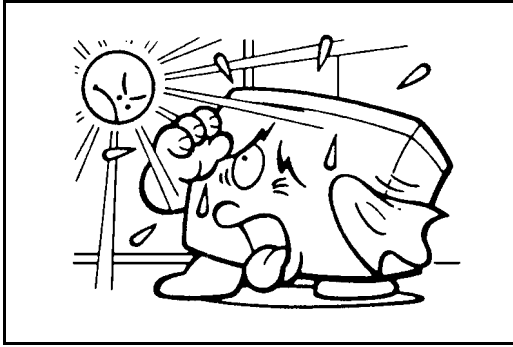
Temperature — 10 to 30°C
(50 to 86°F)
Humidity — 20 to 90 % RH



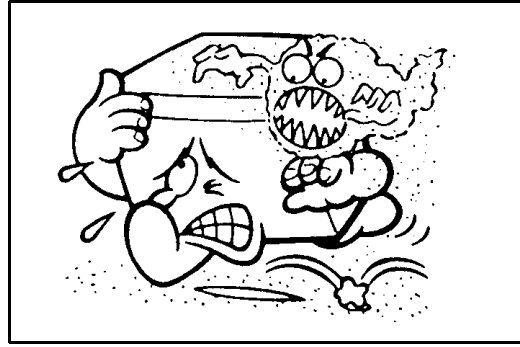
On a strong and level base.

The machine must be level within
5 mm (13/64") both front to rear
and left to right.

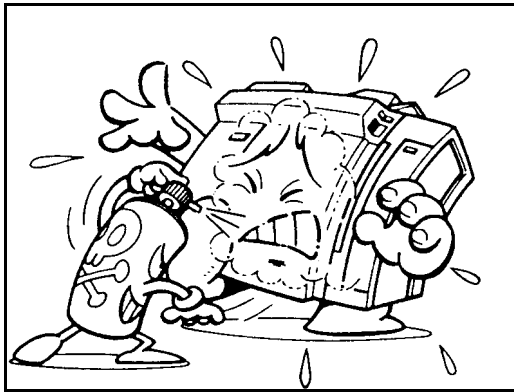
1.2 ENVIRONMENTS TO AVOID:



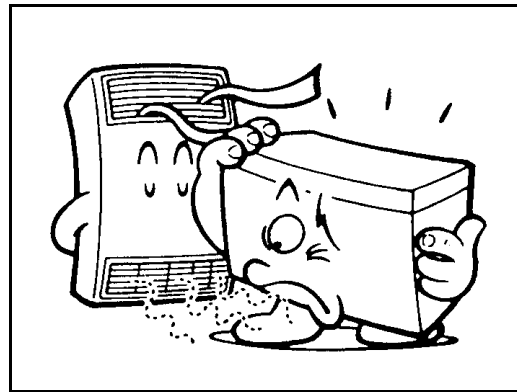
Locations exposed to direct sunlight or strong light (more than 1,500 lux).



Dusty areas.

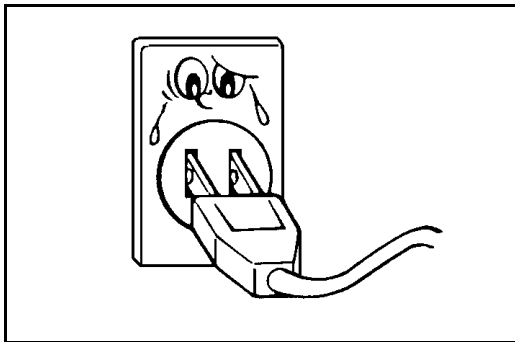


Areas with corrosive gases.

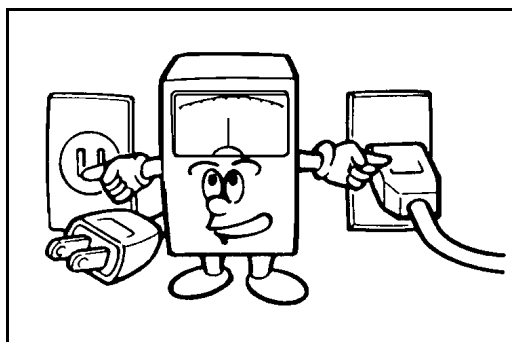


Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause condensation within the machine.)

1.3 POWER CONNECTION:



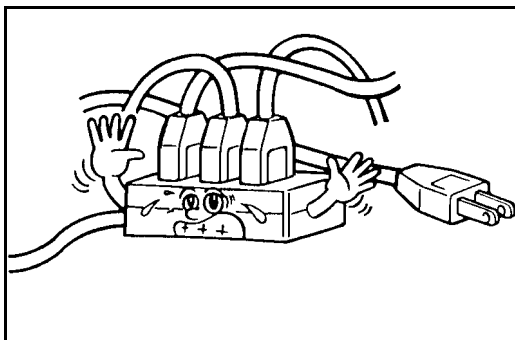
Securely connect the power cord to a power source.



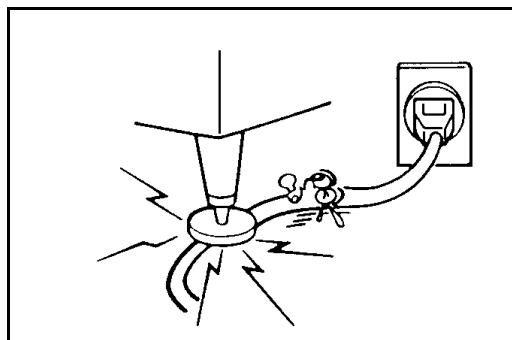
Voltage must not fluctuate more than 10%.

Make sure that the wall outlet is near the machine and easily accessible.

Make sure the plug is firmly inserted in the outlet.



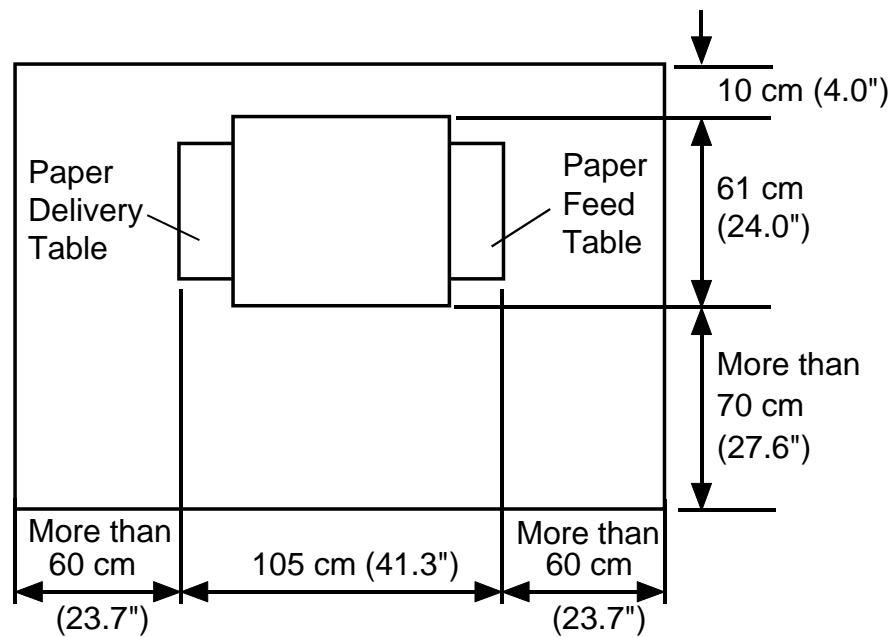
Avoid multiwiring.



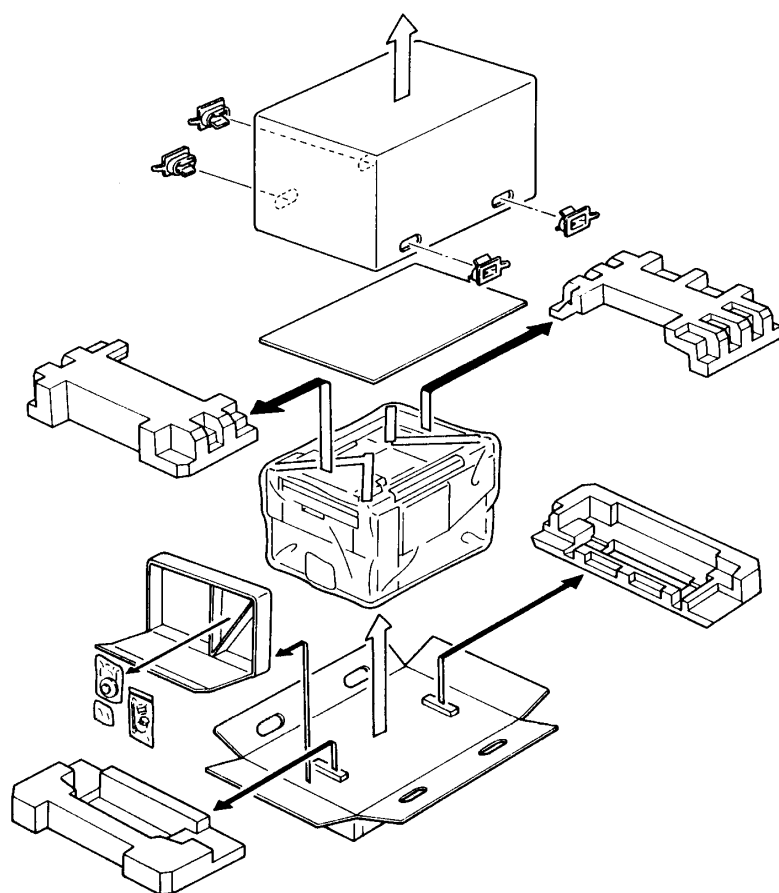
Do not pinch the power cord.

1.4 ACCESS TO MACHINE:

Place the machine near a power source, providing clearance as shown below.



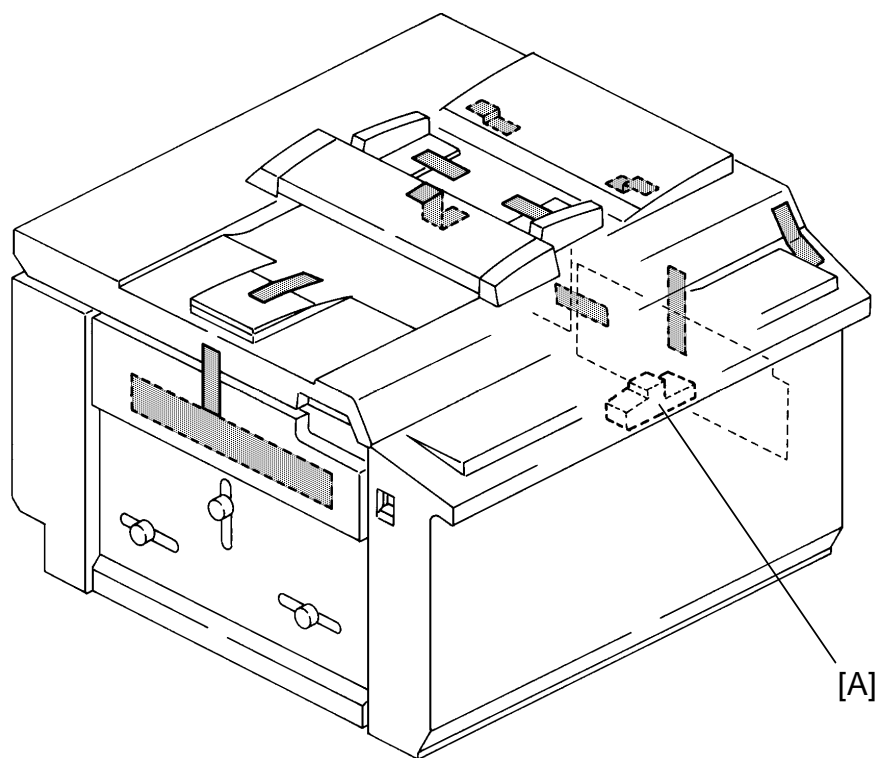
2. INSTALLATION PROCEDURE



Installation

1. Make sure that you have all the accessories listed below.

(1) Master Spool.....	2
(2) Paper Feed Side Pad	2
(3) Thermal Head Cleaner (Excepting OEM's USA version)	1
(4) Operating Instructions.....	1
(5) NECR (Ricoh version only).....	1
(6) Installation Procedure (Ricoh version only).....	1
(7) Brand Stickers (OEM version only).....	1 set
(8) Model Name Plates (OEM version only).....	1 set



2. Mount the machine on a strong and level base.

NOTE: Use a sturdy desk, etc. The machine must be level within 5 mm (0.2") both front to rear and left to right.

3. Remove the tape and string securing the covers and units as shown above.

4. Open the paper feed tray. Then remove the cushion [A] holding the paper feed table.

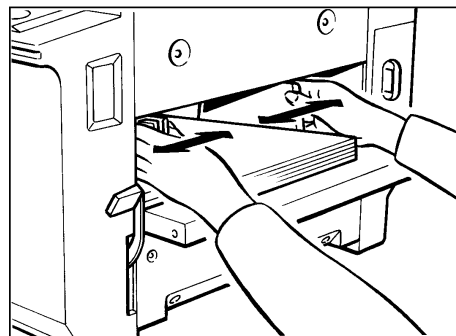
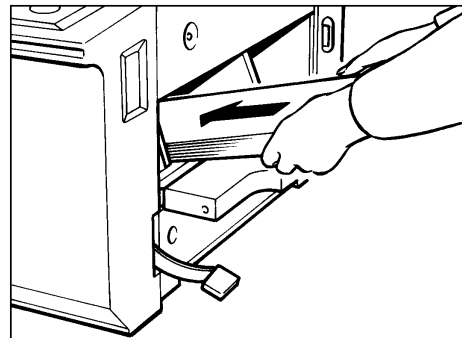
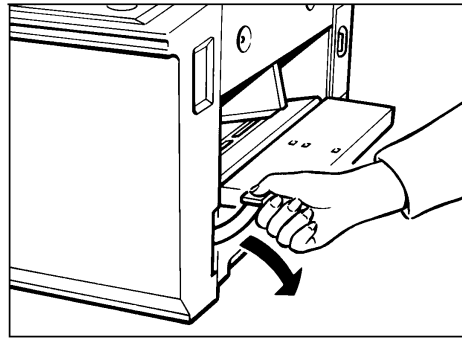
5. Firmly insert the plug in the wall outlet.

NOTE: Make sure that the wall outlet is near the machine and easily accessible.

6. Turn on the main switch.

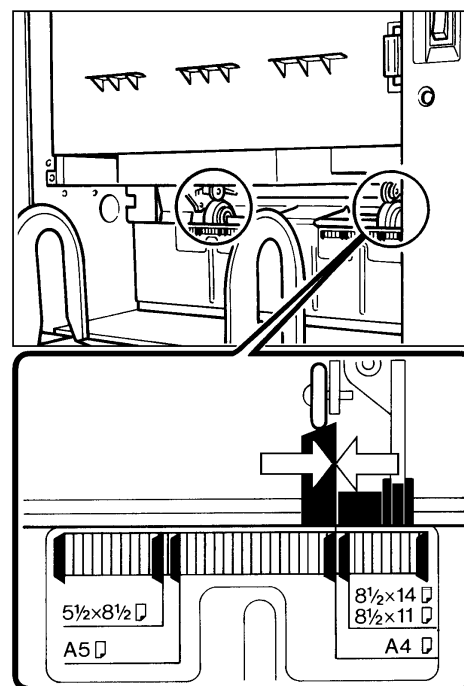
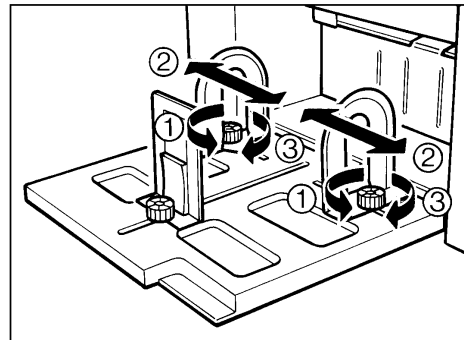
7. Loading paper as follows:

- a. Open the paper feed table carefully.
- b. Press down the feed roller pressure lever.
- c. Place the paper on the paper feed table.
- d. Adjust the paper feed side plates to match the paper size.
- e. Lift the feed roller pressure lever.
- f. Make sure that the paper feed side plates contact the paper lightly.



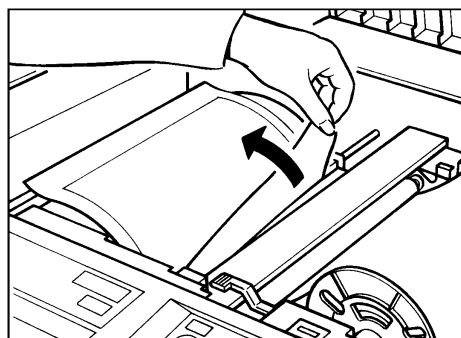
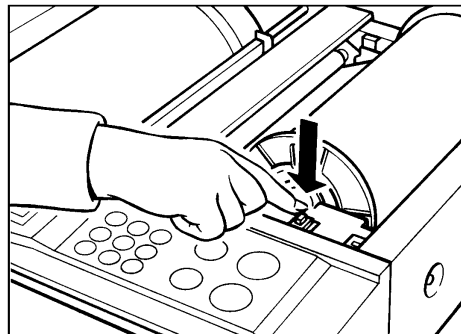
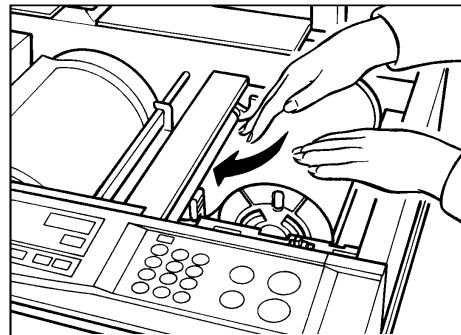
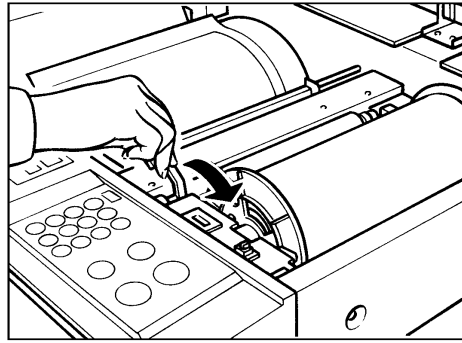
8. Set the paper delivery rollers and guides as follows:

- a. Open the paper delivery table.
- b. Move the paper delivery end and side plates to match the print paper size.
- c. Adjust the paper delivery rollers to match the paper size.



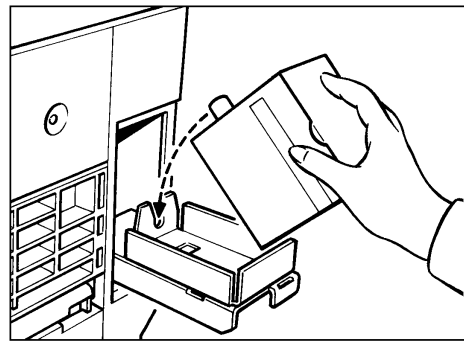
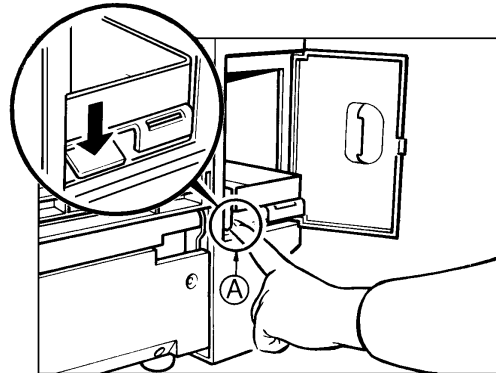
9. Install the master roll as follows:

- a. Insert both spools into the new master roll.
- b. Open the top cover.
- c. Set the master roll.
- d. Lift the pressure release lever to release the feed roller pressure.
- e. Insert the leading edge of the master roll under the pressure roller.
- f. Return the pressure release lever to its original position.
- g. Turn on the main switch.
- h. Press the master cut button to cut the leading edge of the master roll.
- i. Remove the cut-off portion of the master roll.
- j. Close the top cover.



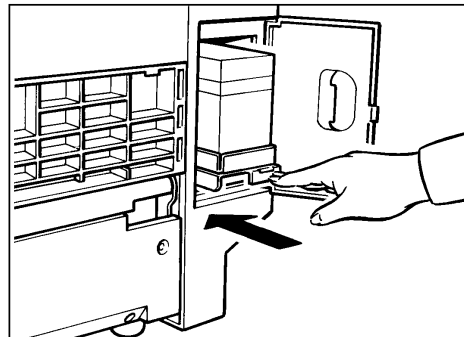
10. Install the ink cartridge as follows:

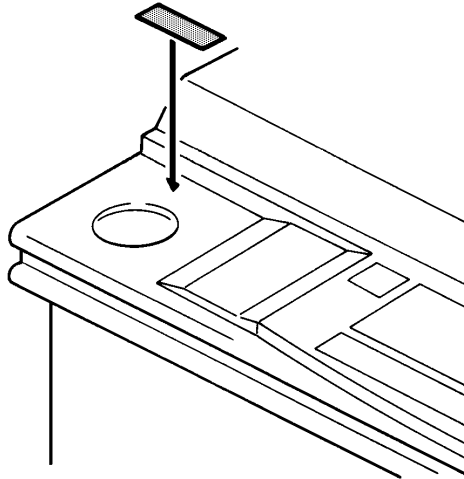
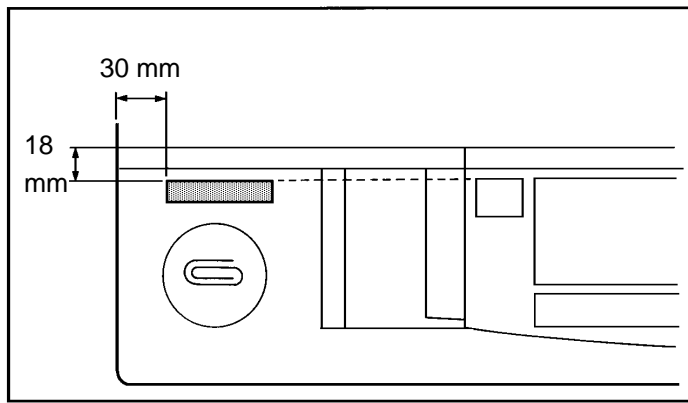
- a. Open the ink cover.
- b. Press down the release lever (green tab [A]). Then pull out the ink cartridge holder.
- c. Open the ink cap and set the ink cartridge as shown in the illustration.
- d. Slide in the ink cartridge holder. Then press the set lever (green tab) until it clicks in position.
- e. Close the ink cover.



11. Make test prints as follows:

- a. Adjust the original guide to match the original size.
- b. Set the original face down.
- c. Input the desired number of prints with the number keys and press the Master Making key.
- d. After one sheet of paper is delivered, press the Print Start key to make prints at the lowest print speed until the print image density stabilizes. Use a test chart to check for changes in the image density.
- e. Check the copy image after about one hundred prints.





BRAND STICKER AND NAME PLATE INSTRUCTIONS

This procedure is for the OEM version machine only.

1. Peel off the backing film of the brand sticker (accessory).
2. Adhere the brand sticker to the operation panel as shown.
3. Peel off the backing film of the model name plate (accessory).
4. Adhere the model name plate in the recess on the front cover.

3. TAPE MARKER INSTALLATION

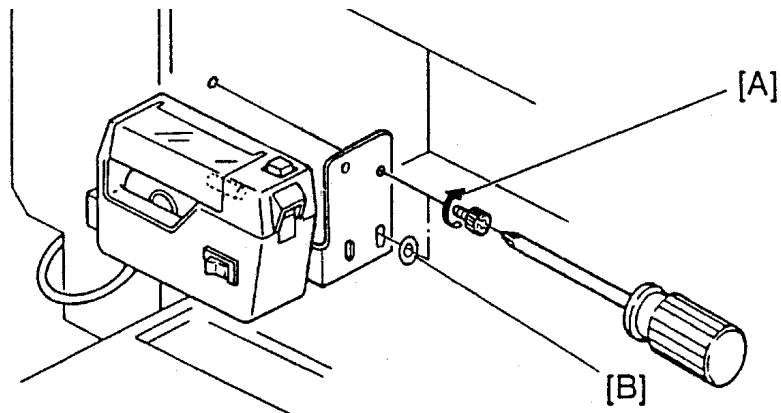
3.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

1. Knob Screw	2
2. Screw M4 x 25	2
3. Hexagon Nut M4	2
4. Lock washer	1
5. Tape	1

NOTE: The kit may contain extra parts that are used to install the tape marker in other model machines.

3.2 INSTALLATION



Installation

1. Turn off the main switch and unplug the power cord.
2. Install the tape marker on the main body with two knob screws [A] (accessory) in the two outside holes of the tape marker bracket.

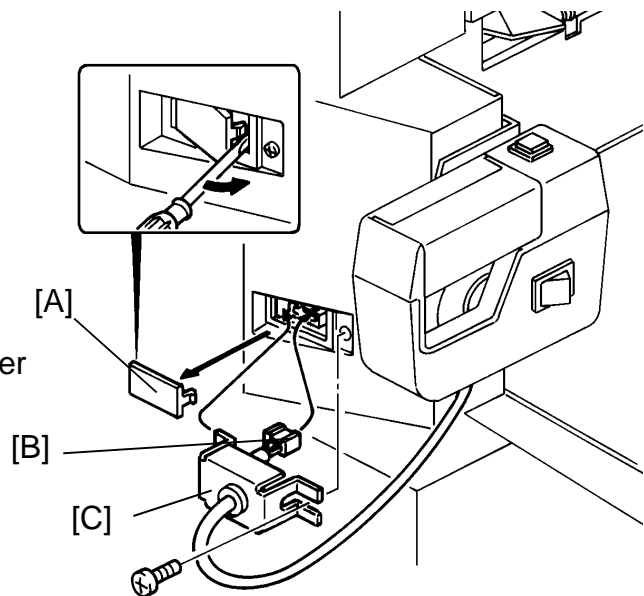
NOTE: 1) Tighten the knob screws with a screwdriver to prevent them from coming loose.

- 2) Install the lock washer [B] (accessory) with the lower of the two knob screws.

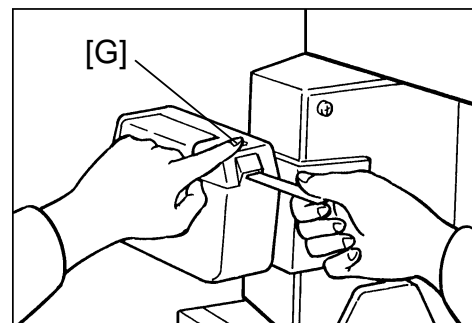
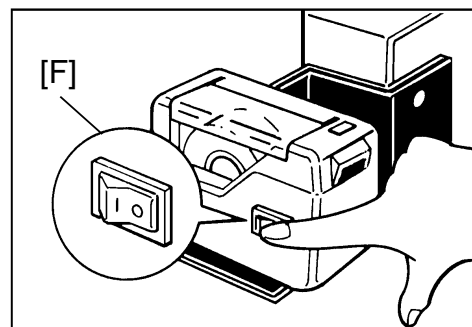
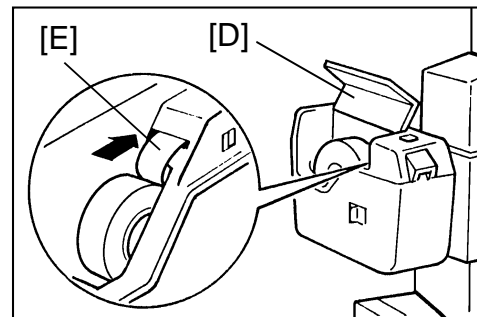
4. Open the tape marker cover [D]. Then, insert the leading edge of the tape into the tape entrance until it stops as shown in the illustration [E].

NOTE: Be sure that the tape is installed in the proper direction. If it is not in the correct direction, the tape marker will not work correctly.

5. Turn on the main switch of the main body and the tape marker switch [F].



6. Press the tape cut button [G] to cut off the leading edge of the tape.
7. Check the tape marker operation using the Memory/Class modes of the main body.



SERVICE TABLES

1. SERVICE REMARKS

1.1 SCANNER SECTION

1. Original Registration Sensor

When replacing the upper or lower original registration sensor with a new one, be sure to adjust the light intensity of the sensor LED.

2. Original Friction Pad

When replacing the original friction pad with a new one, be careful of the position on the spring plate. (See "**1.2 ORIGINAL FRICTION PAD REMOVAL.**")

3. Exposure Glass

When removing and reinstalling the exposure glass, be careful of the setting direction. (See "**1.6 EXPOSURE GLASS REMOVAL.**")

4. Exposure Lamp

Do not touch the exposure lamp while it is on.

1.2 MASTER FEED SECTION

1. Thermal Head

When replacing the thermal head with a new one, be sure to adjust the voltage supplied to the thermal head.

2. Plotter Unit

When removing or installing the plotter unit, be careful not to damage the harness. (See "**3.3 PLOTTER UNIT REMOVAL.**")

1.3 PAPER FEED SECTION

1. Friction Pad

When removing and reinstalling the friction pad base, be sure to install it in the correct direction and position. (See "**5.1 PAPER FEED ROLLER AND FRICTION PAD REMOVAL.**")

2. Paper Feed Roller

Do not touch the surface of the roller with oily hands.

1.4 DRUM AND DRUM DRIVE SECTION

1. Main Motor

When the motor pulley has been removed from the motor and then reinstalled, be careful of the position of the pulley on the motor shaft. (See **"7.4 MAIN MOTOR REPLACEMENT."**)

2. Drum Unit

When removing and reinstalling the drum unit, be sure to engage the drum drive gears correctly. (See **"7.6 DRUM UNIT REMOVAL."**)

3. Doctor Roller

Normally the doctor roller gap is not adjusted or changed. It tends to be difficult to adjust in the field. If the gap becomes narrower, an uneven image may appear on the prints. If it becomes wider, too much ink will be applied to the drum screens, resulting in ink leakage from the drum.

4. Drum Master Clamper

- 1) When removing and reinstalling the drum master clamper, be sure to position the three springs in the drum master clamper correctly.
- 2) Do not allow the inside of the clamping plate to become dirty with ink.
- 3) Do not use alcohol or other solvents to clean the inside of the clamping plate. Use a cloth damped with water.

For all the above, see **"7.8 INK ROLLER UNIT REMOVAL."**

5. Ink Roller Unit

Do not disassemble the ink roller unit. Each part between the front and rear side plates of this unit has been exactly adjusted to keep the doctor and ink rollers parallel against the drum shaft in the production.

1.5 INK SUPPLY SECTION

1. Ink Pump

When the ink pump has been removed and reinstalled, be sure to adjust the plunger position.

2. Ink Cartridge Installation

When you set the ink cartridge, firmly slide it in and push the set lever (to which a green tab is adhered for identification) until it clicks in position. If it is not set correctly, the ink in the cartridge will not be supplied to the drum.

3. To Disable Ink Detection Circuit

The ink detection circuit can be disabled if the main switch is turned on while both the Auto Cycle key and the Reset key are pressed. If this mode is accessed, prints can be made even though the ink detection pin is not in contact with the ink on the ink roller (see page 2-26 Ink Supply Control). When the main switch is turned off, this condition is reset to normal operation.

This function serves to remove the ink inside the drum.

1.6 PAPER DELIVERY SECTION

1. Exit Pawl

- 1) The exit pawl clearance adjustment must be done prior to the drive timing adjustment. Once this has been done then the drive timing adjustment must be carried out.
- 2) Do not disassemble the exit pawl assembly. The clearance between the exit pawl and drum may change.
- 3) Never touch the exit pawls during the drum rotating. The exit pawls will touch the drum surface and damage it.

1.7 ELECTRICAL COMPONENTS

1. Main PCB

When replacing the main PCB with a new one, be sure to perform the followings:

- 1) Original registration adjustment
- 2) Leading edge registration adjustment
- 3) Vertical magnification adjustment
- 4) Trailing edge erase margin adjustment
- 5) Ink detection adjustment

2. Power Supply PCB

- 1) When replacing the power supply PCB with a new one, be sure to adjust the voltage supplied to the thermal head.

(Continued on the next page.)

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- 2) When swinging the power supply PCB out to carry out the exit pawl drive timing adjustment, drum unit removal, etc., be sure to disconnect all of the 4 connectors on the PCB. Especially, be sure to disconnect the connector for ac power supply to the PCB (on the left end of the PCB). If this is not disconnected, the connector itself and the harness may be damaged.

3. A/D Conversion PCB

When replacing the A/D conversion PCB with a new one, be sure to adjust the output of the white level.

4. CCD PCB

When replacing the CCD PCB with a new one, be sure to adjust the output of white level, scanning line position, scanning start position, focus, and horizontal magnification.

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Service Tables

2. MAINTENANCE TABLE

The following items should be maintained periodically. There are two sets of intervals - one based on time and the other based on print count. For maintenance items with entries in both of them, use whichever comes first.

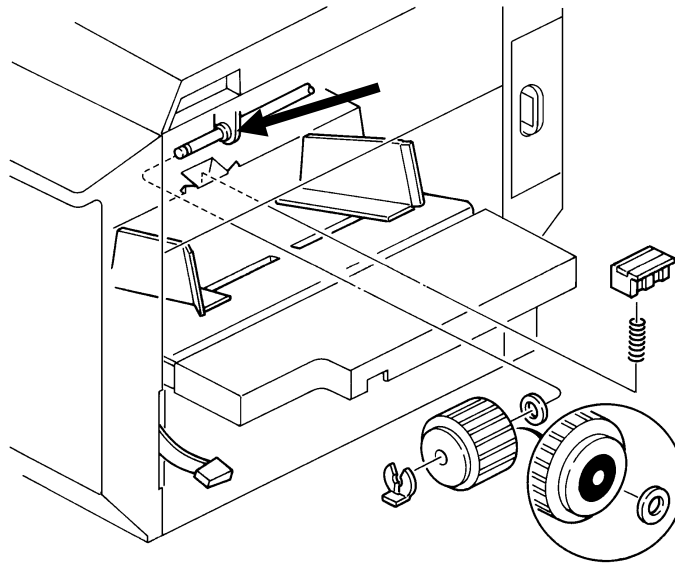
C: Clean R: Replace L: Lubricate A: Adjust

Interval Item	Time				Print Counter					EM	NOTE
	6M	1Y	2Y	3Y	300K	600K	1M	1.2M	2M		
Scanner/Optics											
Exposure Lamp		C	C	C							Dry Cloth
Original Pick-up Roller				R						C	Soft Cloth & Water
Mirror/Reflector		C	C	C							Soft Cloth
Exposure Glass		C	C	C						C	Dry Cloth
Original Registration Sensor		C	C	C							Dry Cloth
Master Feed											
Platen Roller		R	R	R							Expected life is 6K masters.
Master Eject Rollers		C	C	C							Alcohol
Drum Master Sensor										C	Dry Cloth
Paper Feed											
Paper Feed Roller	R	R	R	R	R	R	R	R	R	C	Cloth & Water
Friction Pad	C	C	C	C		R		R			Dry Cloth
Exit Roller			R					R		C	Cloth w/Alcohol
Press Roller			R					R			
Paper Feed Roller One-way Clutch							R		R		
Paper Feed Clutch									R		
Feed Roller and Exit Roller Bushings		L	L	L							Motor Oil (SAE #20)
Feed Roller Drive Gears		L	L	L							Grease (Alvania #2)
Registration/Exit Sensors	C	C	C	C						C	Dry Cloth
2nd Feed Roller	C	C	C	C							Dry Cloth
Drum and Ink Supply											
Cloth Screen			R					R			
Drum Drive Gears and Cam		L	L	L							Grease (Alvania #2)
Drum Flange Bushing		L	L	L							Motor Oil (SAE #20)
In/Outside of Drum		C	C	C							Alcohol
Ink Pump Nozzle		C	C	C							Alcohol
Others											
Timing Belt Tension			A								
Press Roller Lock Lever Position			A								

3. LUBRICATION POINTS

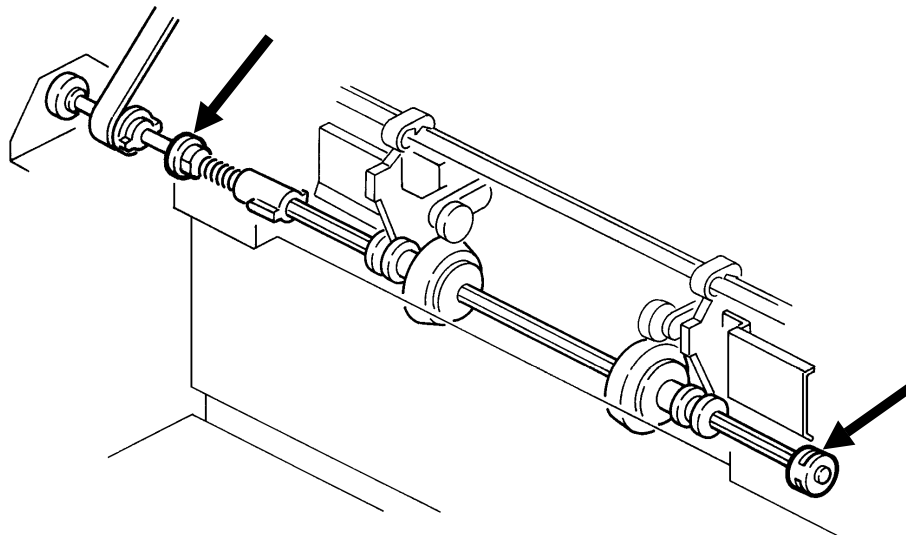
3.1 FEED ROLLER BUSHING

Lubricant: Motor Oil



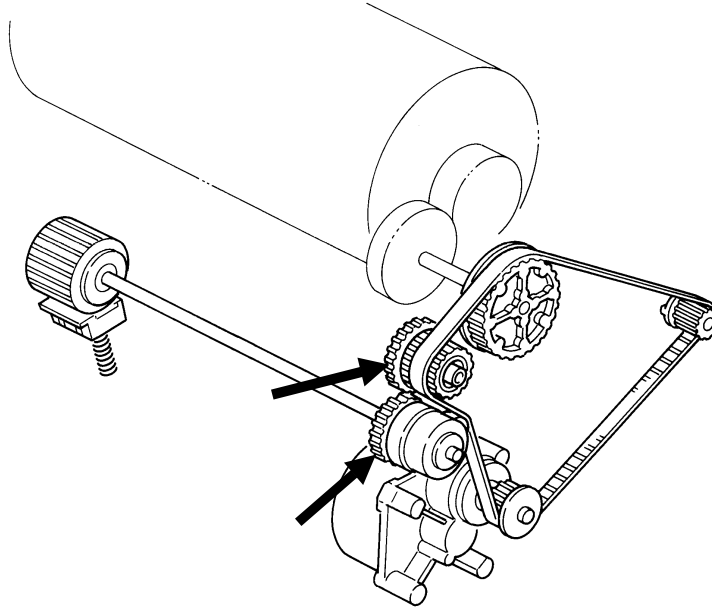
3.2 EXIT ROLLER BUSHINGS

Lubricant: Motor Oil



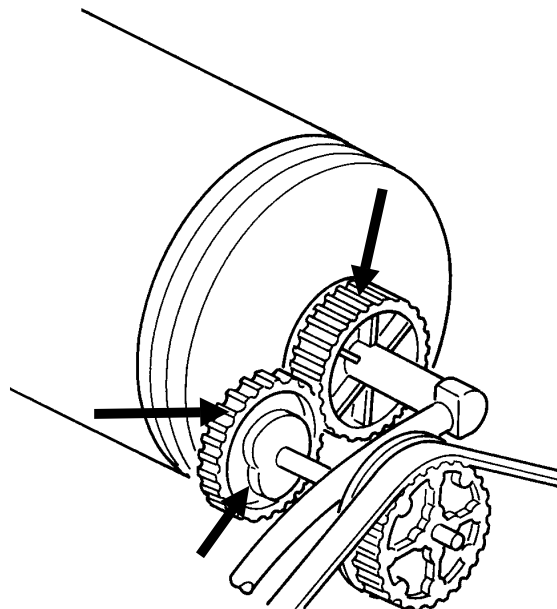
3.3 FEED ROLLER DRIVE GEARS

Lubricant: Grease (Alvania #2)



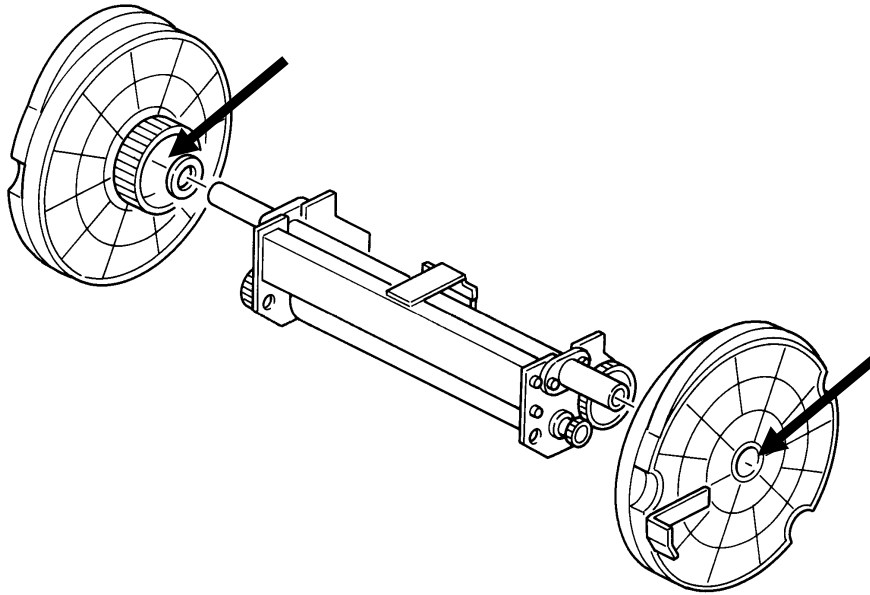
3.4 DRUM DRIVE GEARS AND CAM

Lubricant: Grease (Alvania #2)



3.5 DRUM FLANGE BUSHING

Lubricant: Motor Oil



Service Tables

4. INPUT/OUTPUT CHECK MODE

The electrical components can be checked by this program. The input check mode can check if the sensors or switches function correctly. The output check mode can manually activate the electrical devices, such as motors and solenoids.

4.1 ACCESS PROCEDURE

1. Turn on the main switch while holding down the Print Start, Stop, and Clear keys at the same time.
2. The memory indicator will display "01" which indicates that the Input Check mode is selected.
3. To select the Output Check mode, press the Memory/Class key. The memory indicator will display "00".

4.2 DRUM FREE RUN MODE

1. Select either the Input or Output Check mode.
2. Select the Photo mode by pressing the Image Mode key.
3. Free run starts by pressing the Image Density key. Operation depends on the image Density selection as follows:

Image Density Selection	Drum Speed
Lighter	30rpm
Normal	Stop
Darker	30rpm
Darkest	70/100/130rpm (see Note)

NOTE: The drum speed can be changed by the Speed key.

4.3 INPUT CHECK MODE

By entering a number listed below after accessing the Input check mode, the input level of each electrical device can be checked. Depending on the selected electrical device's condition, the beeper will sound and the machine status indicators will light when the selected device is physically activated.

No.	Device	Conditions when the beeper sounds
1	Feed Start Timing Sensor	Sensor is actuated
2	Feed Jam Timing Sensor	Sensor is actuated
3	Exit Jam Timing Sensor	Sensor is actuated
4	Master Eject Position Sensor	Sensor is actuated
5	Drum Master Sensor	Sensor detects master on the drum
6	Scanner Unit Open Switch	Scanner unit is open
7	Master End Sensor	Sensor detects no master
8	Master Cut Switch	Switch is pressed
9	Left Cutter Switch	Switch is actuated
10	Right Cutter Switch	Switch is actuated
11	Paper End Sensor	Sensor detects no paper
12	Registration Sensor	Sensor detects paper
13	Exit Sensor	Sensor detects paper
14	Master Clamper Switch (Open)	Clamper is open
15	Master Clamper Switch (Close)	Clamper is closed
16	Original Set Sensor	Sensor detects original
17	Original Registration Sensor	Sensor detects original
18	ADF Open Switch	ADF is closed
19	Master Eject Sensor	Sensor is actuated
20	Pressure Plate H.P. Sensor	Sensor is actuated
21	Full Master Sensor	Sensor is actuated
22	DIP SW 103-1	Switch is on
23	DIP SW 103-2	Switch is on
24	DIP SW 103-3	Switch is on
25	DIP SW 103-4	Switch is on
26	DIP SW 103-5	Switch is on
27	DIP SW 103-6	Switch is on
28	DIP SW 103-7	Switch is on
29	DIP SW 103-8	Switch is on

4.4 OUTPUT CHECK MODE

You can turn on each electrical device listed below individually. The procedure is as follows:

1. Select the output check mode.
2. Enter the number of the device which you would like to turn on.
3. Press the Print key to turn on the device.
4. To turn off the device, press the Clear key.

NOTE: Some of the devices are turned on only while the Print key is pressed (Marked with "**").

CAUTION: 1. Do not turn the drum manually nor by using the output mode when the clamper is opened by the output mode.
2. Do not open the clamper when the drum is not at the master feed or eject positions. Use the drum stop functions (No. 15 or 16) before opening the clamper.

No.	Device/Function	Note
1	Thermal Head	Power is applied to the thermal head for 30 seconds after the Print key is pressed. While the power is applied to the thermal head, the beeper sounds.
2	Paper Feed Clutch *	
3	Pressure Release Solenoid *	
4	Master Eject Motor *	
5	Ink Supply Motor *	
6	Master Cutter Motor	The motor stops when one of the cutter position sensors is activated.
7	Print Counter	The counter is increased by one for each press of the Print key.
8	Master Counter	The counter is increased by one for each press of the Print key.
9	Exposure Lamp	
10	Master Clamper Motor (Open) *	The motor stops when the master clamper switch detects the clamper open condition.
11	Master Clamper Motor (Close) *	The motor stops when the master clamper switch detects the clamper closed condition.
12	Master Feed Motor	
13	Original Feed Motor	
14	Shading Distortion Correction	The shading distortion memory is rewritten.
15	Drum Stop (Master Exit)	The drum turns and stops at the master eject position automatically.
16	Drum Stop (Master Feed)	The drum turns and stops at the master feed position automatically.
17	Pressure Plate Motor * (To Home Position)	The motor turns to move the pressure plate towards to the home position. The motor stops when the pressure plate H.P. sensor is actuated.

No.	Device/Function	Note
18	Pressure Plate Motor * (To Pressed Position)	The motor turns to move the pressure plate towards to the pressed position. The motor stops when the full master sensor is actuated.
19	Air Knife Motor *	
20	Operation Panel Indicators	Turns on all the indicators on the operation panel.

4.5 TO DISABLE INK DETECTION CIRCUIT

The ink detection circuit can be disabled if the main switch is turned on while both the Auto Cycle key and the Reset key are pressed. If this mode is accessed, prints can be made even though the ink detection pin is not in contact with the ink on the ink roller (see page 2-26 Ink Supply Control). When the main switch is turned off, this condition is reset to normal operation.

This function serves to remove the ink inside the drum.

5. THERMAL HEAD TEST

This function is used to determine which printer component is causing an image problem on the master.

In this mode, the background pattern that is printed covers the entire sheet of paper.

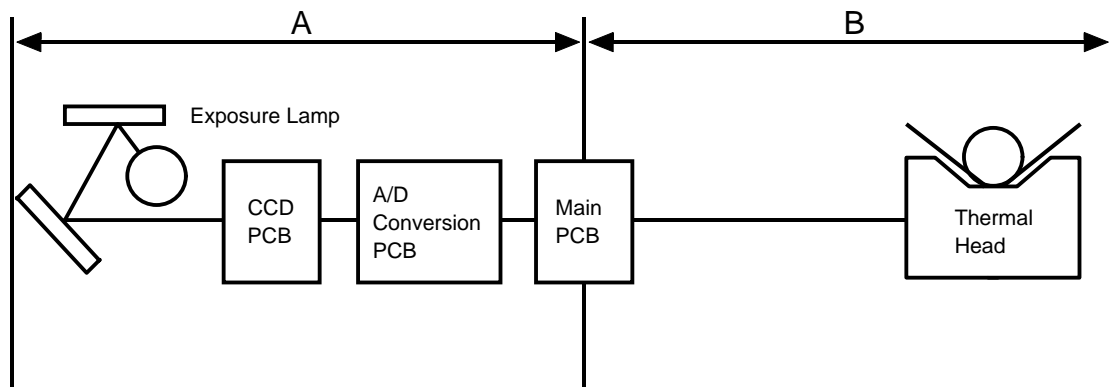
Procedure

1. Turn off the main switch and unplug the power cord.
2. Remove the front cover and turn of the DIP switch 101-1.
3. Place paper on the paper table.
4. Plug the power cord and turn on the main switch.
5. Set an original in the ADF. (Any original is acceptable.)
6. Press the Master Making key.
7. Make prints and check the image.

Assessment

Pattern image is normal Part A component is defective.

Pattern image is abnormal..... Part B component is defective.



6. SERVICE TABLES

6.1 TEST POINT TABLE

Main PCB

No	Usage
TP101	−12 V
TP102	Ink Level (Standard Pulse)
TP103	Ink Level (Detection Pulse)
TP104	GND−b
TP105	+12 V
TP106	+24 V
TP107	4MHz Clock
TP108	+38 V
TP109	+5 V
TP110	GND−a
TP111	Original Registration Sensor

A/D Conversion PCB

No	Usage
TP201	OS Signal (CCD Output)
TP202	VS Signal (Inverted and Amplified CCD Output)
TP203	GND
TP204	Scan Line Trigger

6.2 VARIABLE RESISTOR TABLE

Main PCB

No	Usage
VR101	Ink Detection Adjustment
VR102	Original Registration Sensor Adjustment

A/D Conversion PCB

No	Usage
VR201	White Level Adjustment

Power Supply PCB

No	Usage
VR301	Factory Use Only (+5V Adjustment)
VR401	Thermal Head Voltage Adjustment

6.3 DIP SW TABLE

Main PCB

DPS 101	OFF	ON
1	Outputs Test Pattern	-
2	Dither Matrix (Screw Pattern)	-
3	Dither Matrix (Bayer Pattern)	-
4	Dither Matrix (8 x 8 Pattern)	-
5	Dither Matrix (6 x 6 Pattern)	Dither Matrix (4 x 4 Pattern)
6	Normal	Edge Emphasis in Photo Mode
7	Normal	Enable Data Noise Filter
8	Production Use Only	Must be ON

Factory Setting

DPS 101	
1	ON
2	ON
3	ON
4	ON

DPS 101	
5	ON
6	OFF
7	OFF
8	ON

If two of the DIP-SW 101-2~6 are on, the image will not be produced.

DPS 102	OFF	ON
1	Thermal Head Power Off	Normal

DPS 102			
2	3	4	Leading Edge Registration Adjustment
OFF	OFF	OFF	+2.4 mm
OFF	OFF	ON	+1.6
OFF	ON	OFF	+0.8
OFF	ON	ON	0 (Standard)
ON	ON	ON	-0.8
ON	ON	OFF	-1.6
ON	OFF	ON	-2.4
ON	OFF	OFF	-3.2

DPS 103			
1	2	3	Vertical Magnification
OFF	OFF	OFF	+1.75%
OFF	OFF	ON	+1.25
OFF	ON	OFF	+0.75
OFF	ON	ON	0 (Standard)
ON	OFF	OFF	−0.75
ON	OFF	ON	−1.25
ON	ON	OFF	−1.75
ON	ON	ON	−2.25

DPS103		Description
4	5	Trailing Edge Erase Margin Adjustment
OFF	OFF	+1mm
OFF	ON	+2mm
ON	OFF	+3mm
ON	ON	−1mm

DPS 103	OFF	ON
6	Normal	Enable Key Counter Operation
7	Not Used	
8	Not Used	

6.4 LED TABLE

Main PCB

LED #	OFF	ON
101	Less Ink Condition	Sufficient Ink Condition
102	–	Paper Feed Condition

6.5 FUSE TABLE

Main PCB

FUSE #	Rated Current	Protect	
		Voltage	Device
101	630 mA	24 V	Master Cutter, Master Clamper, and Pressure Plate Motors, Ink Motor
102	4 A	38 V	Air Knife Motor

7. SERVICE CALL INDICATIONS TABLE

No.	Description/Definition	Points to Check
E-00	<i>Clamper Motor Failure</i> The main PCB cannot detect the master clamper switch signals (Open/Close) within 1.2 seconds after the clamper motor is turned on.	<ul style="list-style-type: none"> * Mechanical interference with the clamper drive * Master clamper sensor * Clamper motor * Clamper drive mechanism
E-01	<i>Cutter Unit Failure</i> Neither the left nor right cutter switch turns on within 2 seconds after the cutter motor is turned on.	<ul style="list-style-type: none"> * Cutter switches * Cutter motor * Cutter drive mechanism
E-04	<i>Thermal Head Overheat</i> Temperature of the thermal head is greater than 48°C when the Master Making key is pressed.	<ul style="list-style-type: none"> * Thermal head * Thermistor of the thermal head (short circuit)
E-06	<i>Main Motor Failure</i> The main PCB cannot detect the feed start timing sensor signal within 2 seconds after the main motor is turned on.	<ul style="list-style-type: none"> * Main motor * Power to the main motor * Feed start timing sensor * Mechanical interference with the drum drive
E-07	<i>ROM Data Error</i> The CPU detects errors in the ROM data when the main switch is turned on.	<ul style="list-style-type: none"> * ROM on the main PCB * CPU on the main PCB
E-08	<i>Power Supply Unit Overheat</i> The main PCB receives the overheat signal from the power supply unit when the Master Making key is pressed.	<ul style="list-style-type: none"> * Power supply unit
E-09	<i>Thermal Head Thermistor Open</i> The thermistor output voltage (CN104-13) is over 2.83 volt.	<ul style="list-style-type: none"> * Thermal head thermistor * Thermal head connector
E-10	<i>Thermal Head Drive Failure</i> The CPU detects abnormal condition in the thermal head drive circuit.	<ul style="list-style-type: none"> * Thermal head * Main PCB * Thermal head connector and harness
E-12	<i>Pressure Plate Motor Failure</i> The pressure plate home position sensor signal is not detected within 3 seconds after the pressure plate motor is turned on.	<ul style="list-style-type: none"> * Mechanical interference with the pressure plate drive * Pressure plate motor * Pressure plate H.P. sensor

REPLACEMENT AND ADJUSTMENT

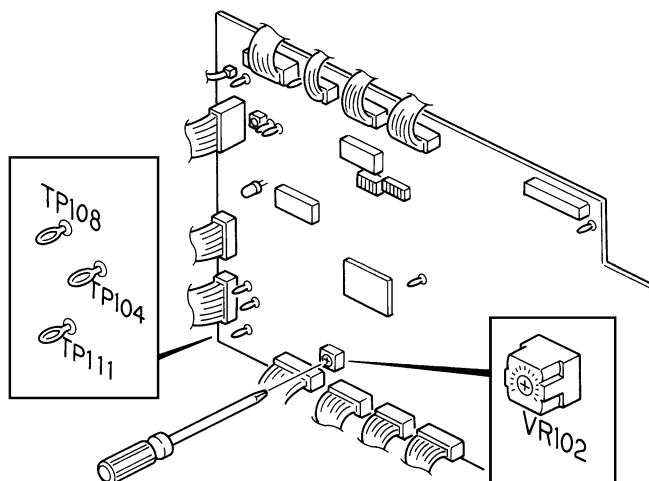
1. SCANNER SECTION

1.1 ORIGINAL REGISTRATION SENSOR ADJUSTMENT

PURPOSE: To ensure correct sensor detection for originals, obtain the correct light intensity of the sensor (light emitter side).

ADJUSTMENT STANDARD:

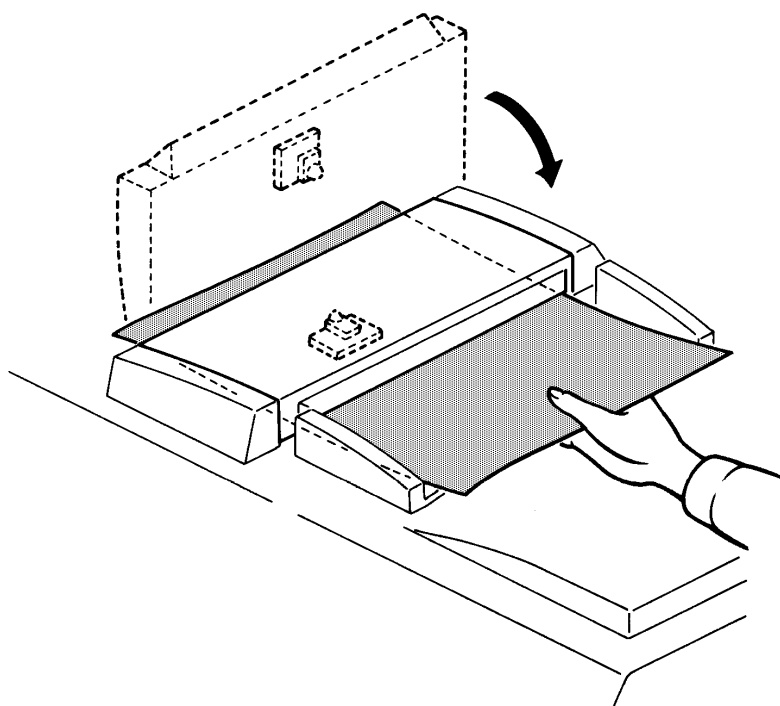
3.4 volts or more when 80 g/m² white paper is placed and the exposure lamp turns on. (It should be between 0.25 and 0.50 volts when there is no paper and light.)



CAUTION: This adjustment is required when the upper original registration sensor (light receiver), lower original registration sensor (light emitter), or the main PCB has been replaced.

Replacement
and
Adjustment

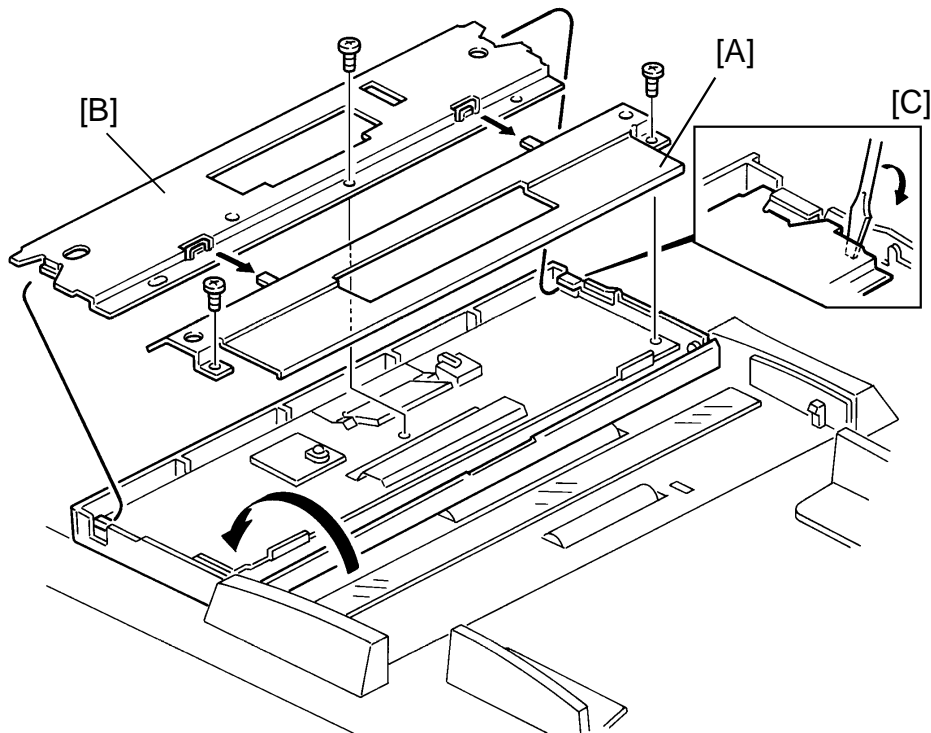
1. Turn off the main switch and disconnect the power plug.
2. Remove the front cover (4 screws).
3. Connect the power plug, and turn on the main switch to access the output mode. (Turn on the main switch while holding down the Print Start, Stop, and Clear keys together. Then, press the Memory/Class key once to indicate "00" in the memory display.)
4. Measure the sensor (light receiver) output voltage between TP104 (grounding) and CN110-5 on the main PCB. It should be between 0.25 and 0.50 volts. (0.375 volts is the target.)
5. If it is not correct, adjust the sensor (light emitter) output by turning VR102 on the main PCB.



6. Open the ADF unit and place a white sheet of 80 g/m² paper on the exposure glass. Then close the ADF unit.
7. Select the exposure lamp on mode. (Enter "9" with the number key.)
8. Press the Print Start key to turn on the exposure lamp. Then repeat step 4. The sensor output should be 3.4 volts or more.
9. If it is not correct, repeat steps 4 to 8.

CAUTION: The sensor (light receiver) output level varies depending on the paper type placed on the exposure glass. If a white sheet of 64 g/m² paper is used, the sensor output should be 3.0 volts or more.

1.2 ORIGINAL FRICTION PAD REMOVAL

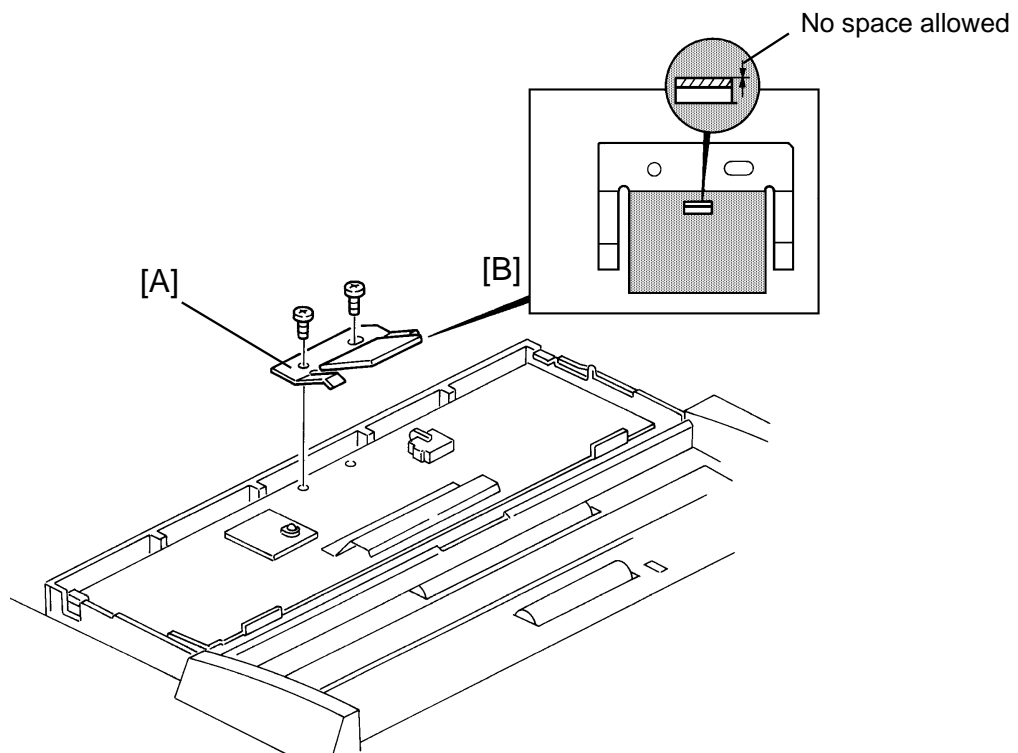


1. Turn off the main switch and disconnect the power plug.
2. Open the ADF and remove the white plate [A] (2 screws).
3. Remove the upper original guide plate [B] (1 screw).

NOTE: Using a minus screwdriver lift the rear (non-operation side) of the guide plate, which is hooked under the rear side frame, as shown [C], but not in the front side (operation side).

When installing the guide plate, set the hook on the operation side first.

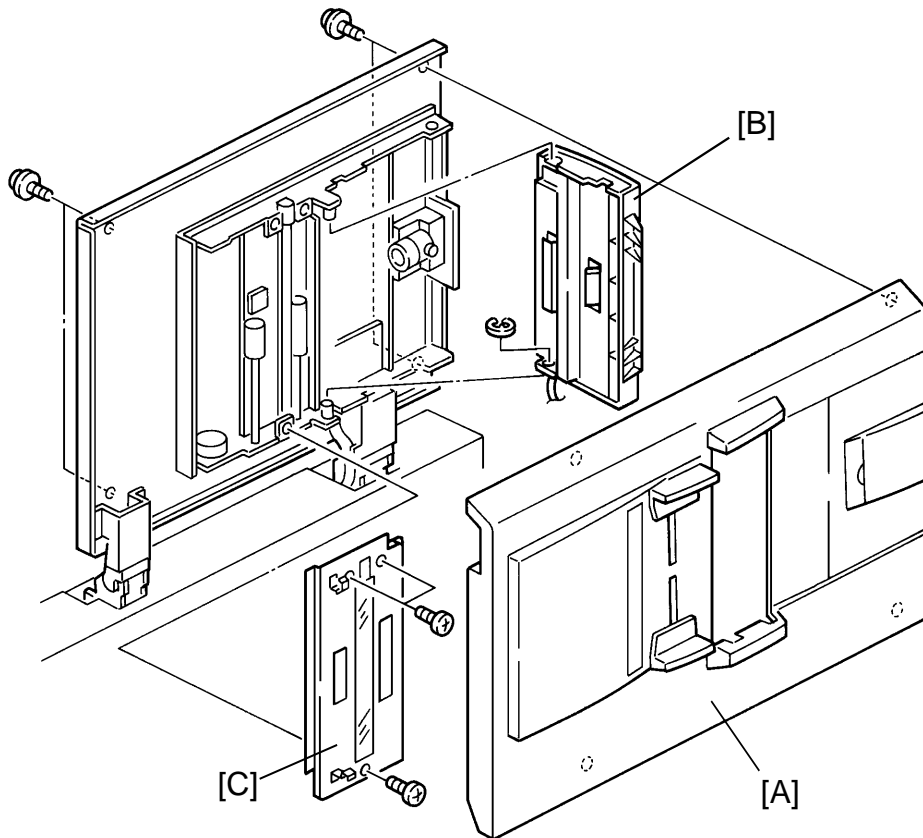
Replacement
and
Adjustment



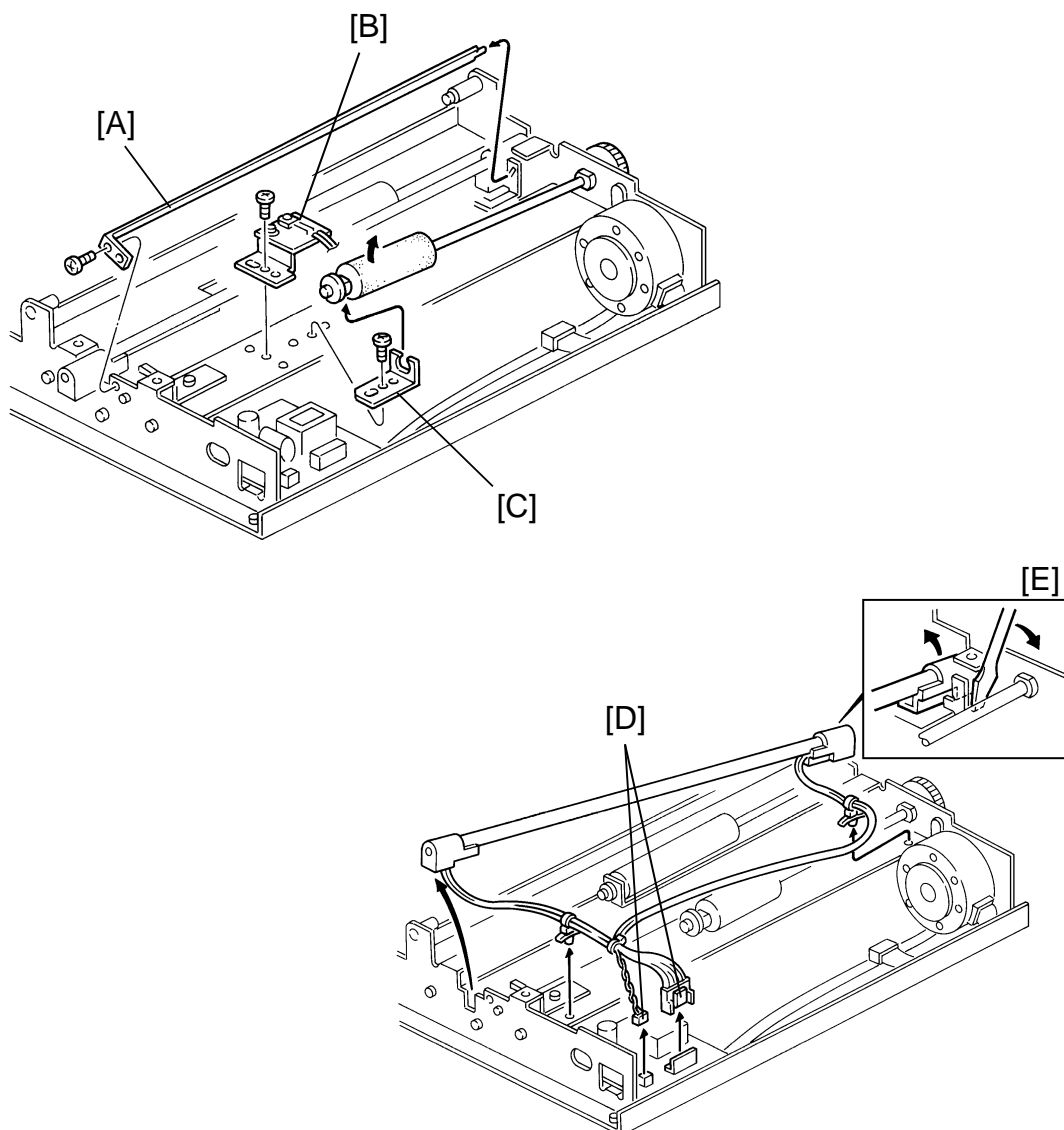
4. Remove the spring plate [A] (2 screws). Peel off the original friction pad from the spring plate and replace it if necessary.

CAUTION: 1) When you stick the original friction pad on the spring plate, make sure that the edge of the hole in the pad is flush with the bent portion of the spring plate as shown [B].
2) Do not damage or bend the spring plate. Original misfeeds may occur if it is deformed.

1.3 EXPOSURE LAMP REMOVAL

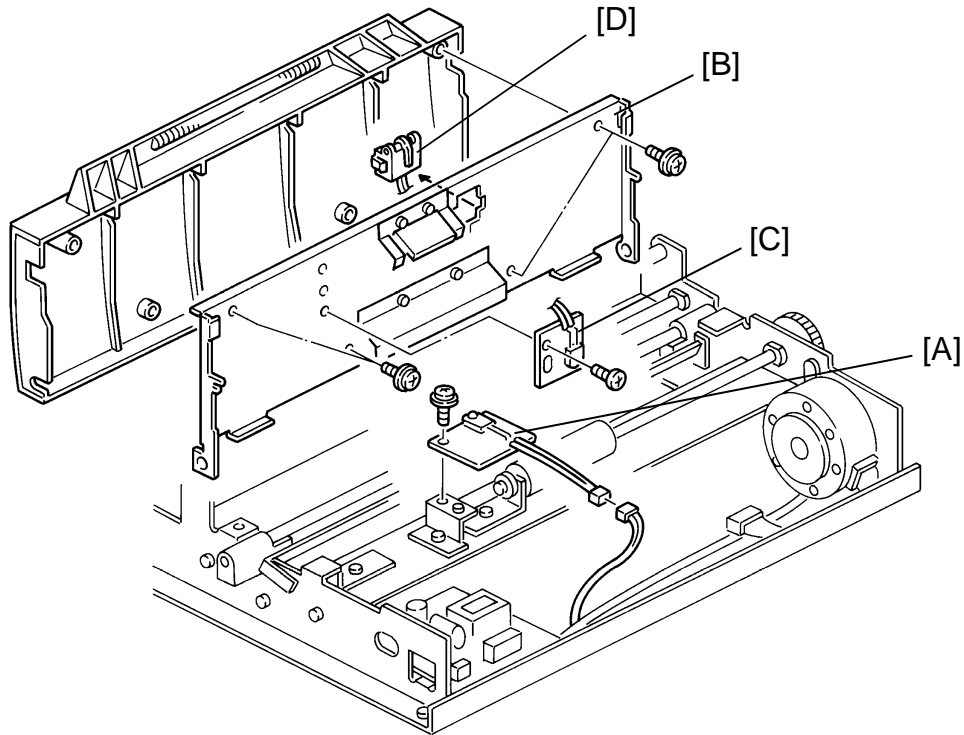


1. Turn off the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Remove the scanner cover [A] (4 screws).
4. Remove the ADF unit [B] (1 E-ring). You do not have to remove it completely by disconnecting the connector from the ADF.
5. Remove the lower original guide plate [C] (3 screws).



6. Remove the reflector [A] (1 screw).
 7. Remove the bracket [B] with the original registration sensor and the bracket [C] holding the original pick-up roller shaft (1 screw each).
 8. Disconnect the connectors [D] to the lamp control PCB. Then, take off the two harness clamps from the base plate.
 9. Lift up the front end of the lamp (operation side). Then, twist the other end slightly and remove it using a minus screw driver as shown [E].
- NOTE:** When installing the lamp, insert the non-operation side first.

1.4 ORIGINAL SET AND REGISTRATION SENSOR REMOVAL



UPPER ORIGINAL REGISTRATION SENSOR:

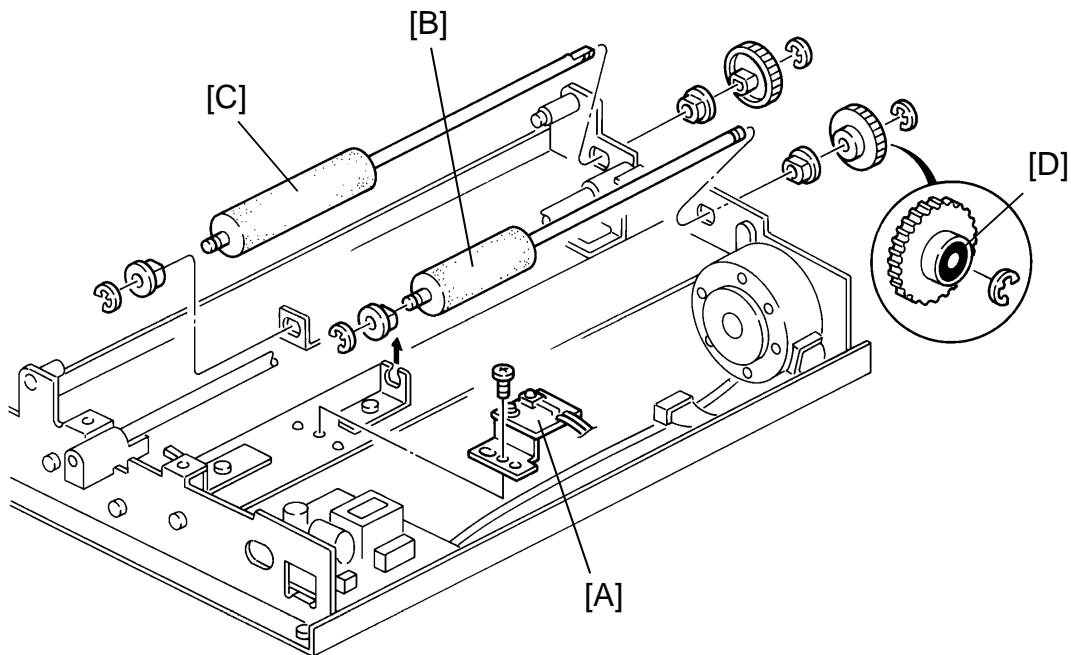
1. Follow steps 1 to 5 in "**1.3 EXPOSURE LAMP REMOVAL**" to remove the lower original guide plate.
2. Remove the lower original registration sensor [A] (light emitter) (1 screw).

LOWER ORIGINAL REGISTRATION AND ORIGINAL SET SENSORS:

1. Follow steps 1 to 3 in "**1.2 ORIGINAL FRICTION PAD REMOVAL**" to remove the upper original guide plate.
2. Remove the ADF base [B] (4 screws).
3. Remove the upper original registration sensor [C] (light receiver) (1 screw) and original set sensor [D].

Replacement
and
Adjustment

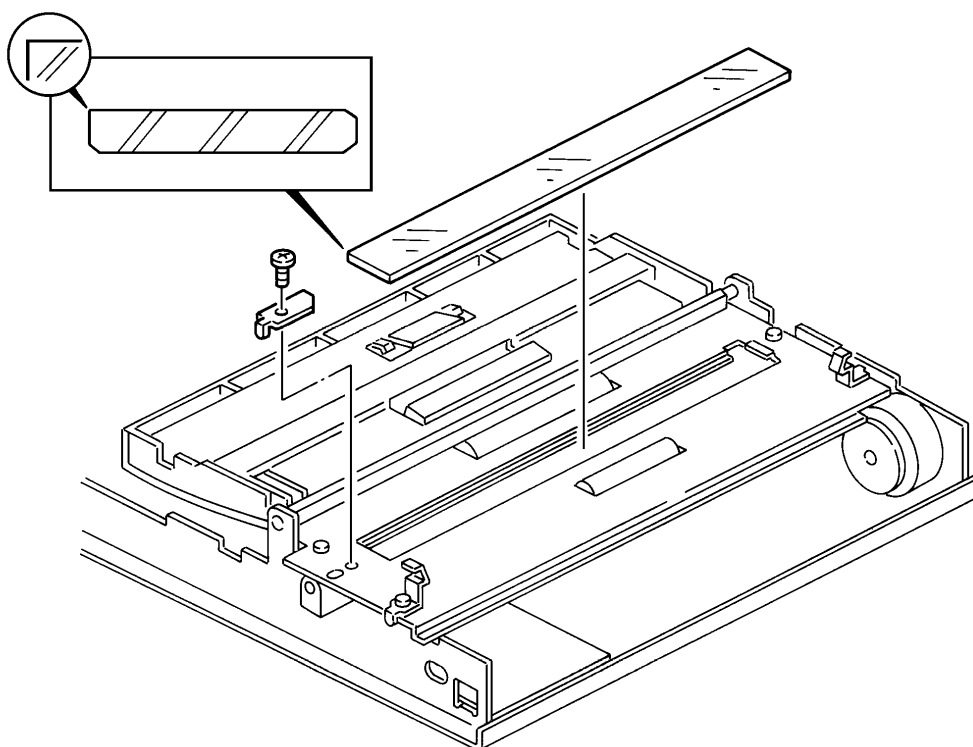
1.5 ORIGINAL PICK-UP AND FEED ROLLER REMOVAL



1. Follow steps 1 to 5 in "**1.3 EXPOSURE LAMP REMOVAL**" to remove the lower original guide plate.
2. Remove the bracket [A] with the original registration sensor (1 screw).
3. Remove the original pick-up roller [B] and original feed roller [C] (2 E-rings, 2 bushings, and 1 gear each).

CAUTION: Note that the gear on the pick-up roller shaft has a built in one-way clutch. Make sure that the blue flange of the gear [D] faces the outside.

1.6 EXPOSURE GLASS REMOVAL



When the exposure glass is installed, set it as shown.

Replacement
and
Adjustment

2. COPY IMAGE ADJUSTMENT

2.1 LEADING EDGE REGISTRATION ADJUSTMENT

PURPOSE: To meet the image position in the vertical direction on the print paper with that on the original.

ADJUSTMENT STANDARD:

0±2.0 mm

CAUTION: This adjustment is required when the main PCB has been replaced.

1. Turn on the main switch, and make a print.

NOTE: The image position on a trial print, which is automatically made after making a master, tends to vary. Do not use the trial print to check the image registration.

2. Measure the difference between the leading edge registration of the original and print.
3. If the value does not meet the standard, then adjust it. The leading edge registration changes depending on the positions of DPS102-2, -3, and -4 (DIP switches) on the main PCB as follows:

DPS102-2	-3	-4	Difference [mm]
OFF	OFF	OFF	+2.4
OFF	OFF	ON	+1.6
OFF	ON	OFF	+0.8
OFF	ON	ON	0 (Standard)
ON	ON	ON	-0.8
ON	ON	OFF	-1.6
ON	OFF	ON	-2.4
ON	OFF	OFF	-3.2

NOTE: The initial DPS settings differ from one machine to another as they are changed during production.

4. After adjustment, make more than 10 continuous copies to check the variation.

2.2 VERTICAL MAGNIFICATION ADJUSTMENT

ADJUSTMENT STANDARD:

Within $100 \pm 0.8\%$

CAUTION: This adjustment is required when the main PCB has been replaced.

NOTE: The horizontal magnification depends on the position of the CCD PCB. (The standard is within 0.5%.)

1. Turn on the main switch, and make a print.
2. Compare the image on the print with that on the original.
3. Make sure that the difference of the vertical magnification is within the standard (0.8% or less).

NOTE: If an original has a line of 100 mm in the exact vertical direction, the line on the print should be between 99.5 to 100.5 mm.

4. If it is out of the standard, then adjust it. The vertical magnification changes depending on the positions of DPS103-1, -2, and -3 (DIP switches) on the main PCB as follows:

DPS103-1	-2	-3	Difference [%]
OFF	OFF	OFF	+1.75
OFF	OFF	ON	+1.25
OFF	ON	OFF	+0.75
OFF	ON	ON	0 (Standard)
ON	OFF	OFF	-0.75
ON	OFF	ON	-1.25
ON	ON	OFF	-1.75
ON	ON	ON	-2.25

NOTE: The initial DPS settings differ from one machine to another as they are adjusted during production.

2.3 TRAILING EDGE ERASE MARGIN ADJUSTMENT

PURPOSE: To minimize the dirtiness of ink on the press roller.

ADJUSTMENT STANDARD:

1.0 to 2.0 mm

CAUTION: This adjustment is required when the main PCB has been replaced.

1. Turn on the main switch, and make a print using an original that has an image in the trailing part.

2. Measure the trailing edge erase margin.

NOTE: If the trailing edge of the original is not sited on the print, shift the image in the forward direction by pressing the Image Shifting key and make another print.

3. Make sure that the value is within the standard (1.0 to 2.0 mm).

4. If it is out of the standard, then adjust it. The trailing edge erase margin changes depending on the positions of DPS103-4, and -5 (DIP switches) on the main PCB as follows:

DPS103-4	-5	Difference [mm]
OFF	OFF	+1
OFF	ON	+2
ON	OFF	+3
ON	ON	-1

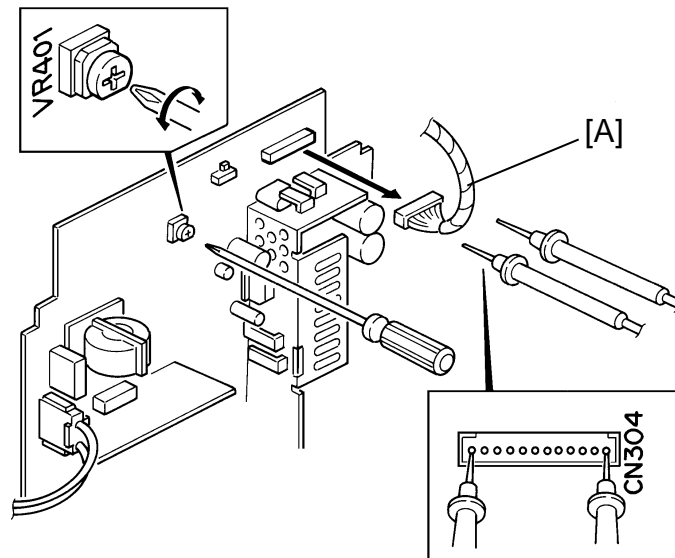
NOTE: The initial DPS settings differ from one machine to another as they are adjusted during production.

3. MASTER FEED SECTION

3.1 THERMAL HEAD VOLTAGE ADJUSTMENT

PURPOSE: To maintain quality when making masters and to prevent the thermal head from being damaged.

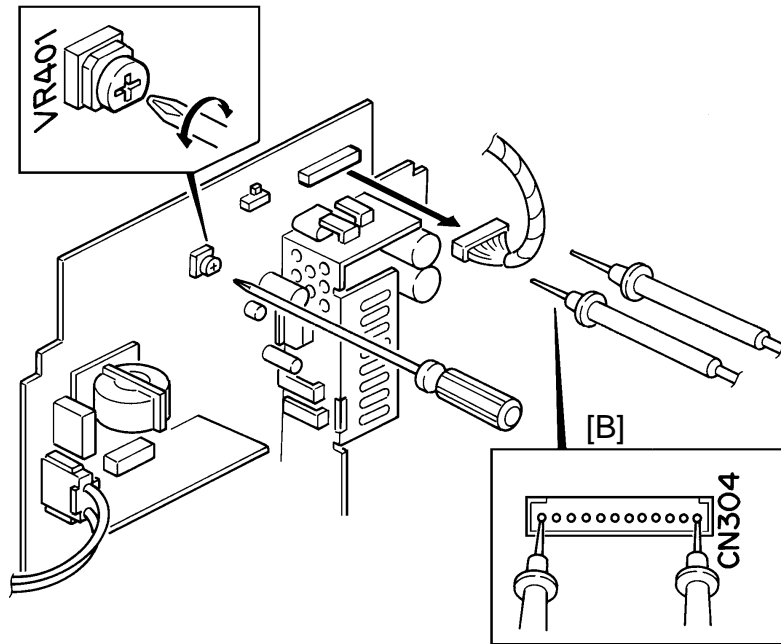
ADJUSTMENT STANDARD: Refer to the voltage value (X) described on the thermal head. The value varies from one thermal head to another. The adjustment voltage should be between "X - 0.05" and "X + 0.05."



CAUTION: This adjustment is always required when the thermal head or power supply PCB has been replaced.

Replacement
and
Adjustment

1. Turn off the main switch and disconnect the power plug.
2. Remove the front cover (4 screws).
3. Disconnect CN304 [A] on the power supply PCB.
4. Read the voltage value described on the decal on the thermal head.
5. Connect the power plug, and turn on the main switch to access the output mode. (Turn on the main switch while holding down the Print Start, Stop, and Clear keys together. Then, press the Memory/Class key once to indicate "00" in the memory display.)
6. Select the thermal head power supply mode. (Enter "1" with the number key.)



7. Press the Print Start key. The power to the thermal head is applied for about 30 seconds. Press it again if you cannot finish the adjustment.

NOTE: A beeper sounds while supplying the power.

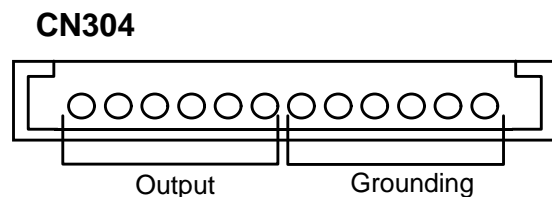
8. Measure the voltage between output terminal and grounding terminal of CN304.

CAUTION: Use the outside terminals in the connector as shown [B] to measure the voltage. If the output terminal and grounding touch each other, the PCB will become damaged.

9. Turn VR401 so that the value becomes within 0.05 volts from the value that you obtained in step 4.

CAUTION: Never turn VR401 clockwise rapidly while the connector is connected. The thermal head will be damaged if too much voltage is supplied suddenly.

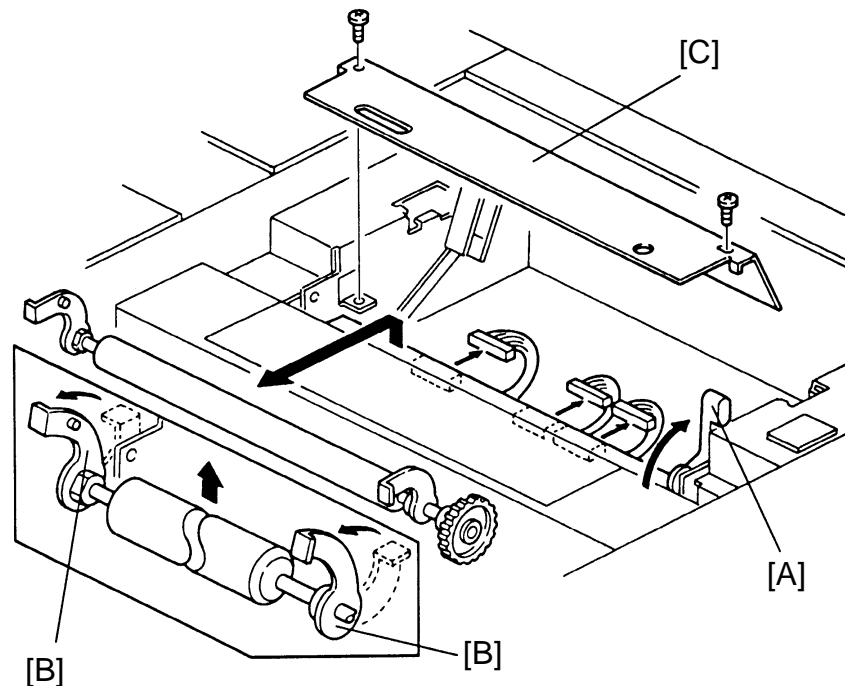
NOTE: The output and grounding terminals are positioned in the connector as follows:



3.2 THERMAL HEAD REMOVAL

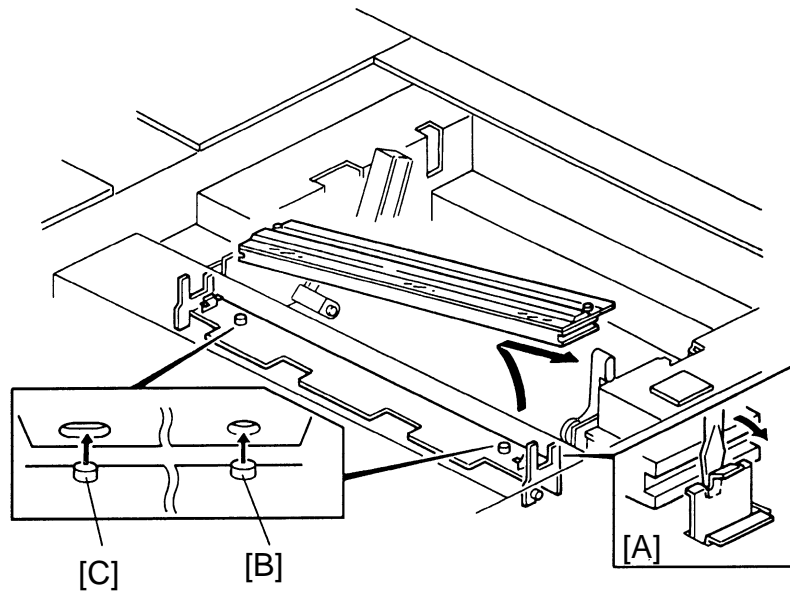
Rev. 6/28/96

For the VT1730



1. Turn "OFF" the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Lift the platen roller release lever [A] up until it locks. The and remove the platen roller [C].
4. Remove the thermal head cover [C] (2 screws).
5. Disconnect the connector from the thermal head.

Replacement
and
Adjustment

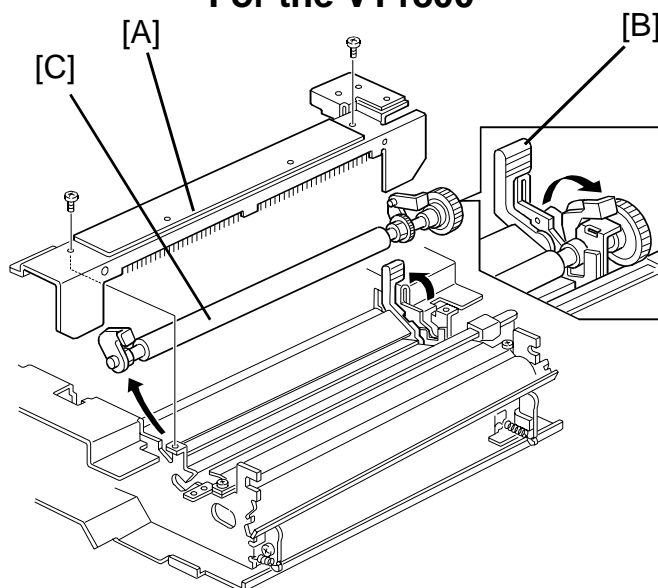


6. Unhook the lock pawl [A] on the front side of the thermal head (operation side) using a small slotted screw driver. While doing this, remove the thermal head.

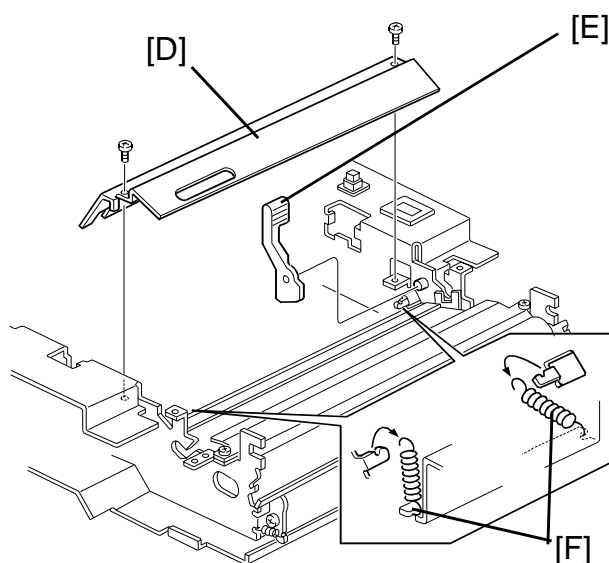
CAUTION: Be careful not to hit the thermal head surface against the plate above it.

NOTE: There are two projections on the thermal head base, and they meet the holes behind the thermal head. The projection on the front [B] (operation side) securely meets the hole, but the other [C] is loose. Therefore, remove the front side first.
When installing, make sure to set the front side first.

IMPORTANT: If the thermal head has been replaced with a new one, the input voltage must be readjusted. Follow the "THERMAL HEAD VOLTAGE ADJUSTMENT" section in the service manual.

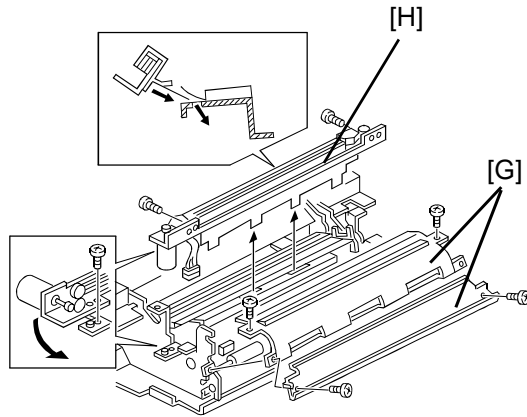
For the VT1800

1. Turn off the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Remove the platen roller cover [A].
4. Lift the platen roller release lever [B] up until it locks. Then, unhook the lock levers and remove the platen roller [C].

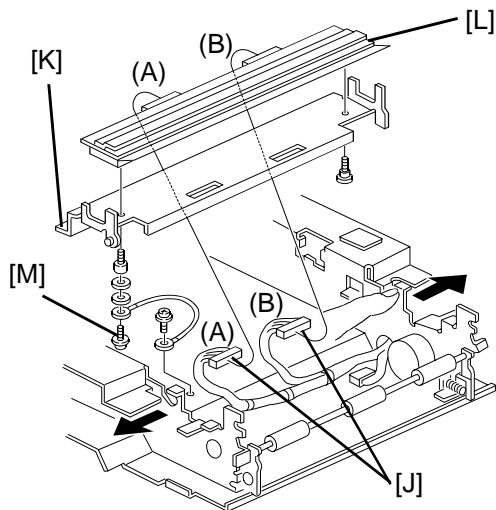


5. Remove the thermal head cover [D], then remove the release lever [E].
6. Remove the two springs [F].

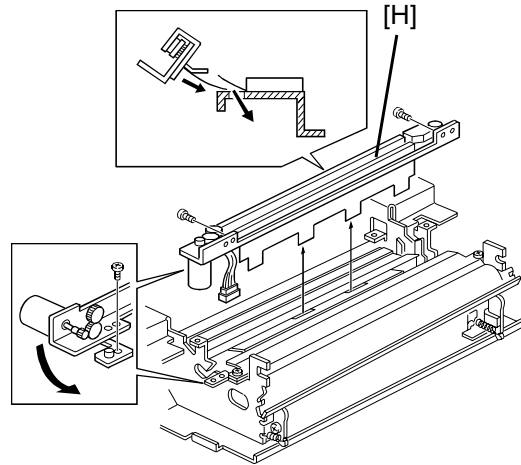
IMPORTANT: If the thermal head has been replaced with a new one, the input voltage must be readjusted. Follow the "THERMAL HEAD VOLTAGE ADJUSTMENT" section in the service manual.



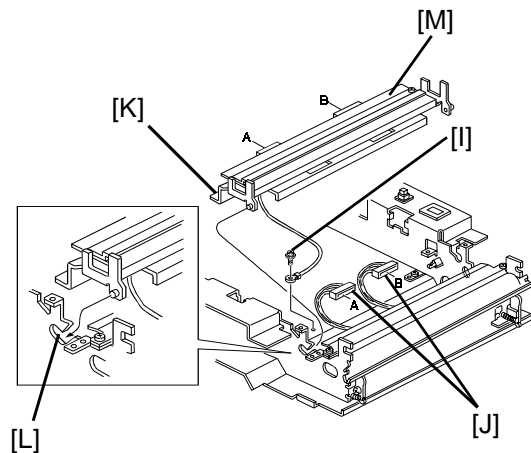
7. Remove the guide plate [G].
8. Remove the cutter unit [H].



9. Remove the grounding screw [I].
10. Disconnect the connectors [J] from the thermal head.
11. While spreading both side frames outward, unhook the pins on both sides of the thermal head bracket [K] and remove the bracket (with the thermal head).
12. Remove the two screws [M] and remove the thermal head.



7. Remove the cutter unit [H].
8. Remove the grounding screw [I] (below)

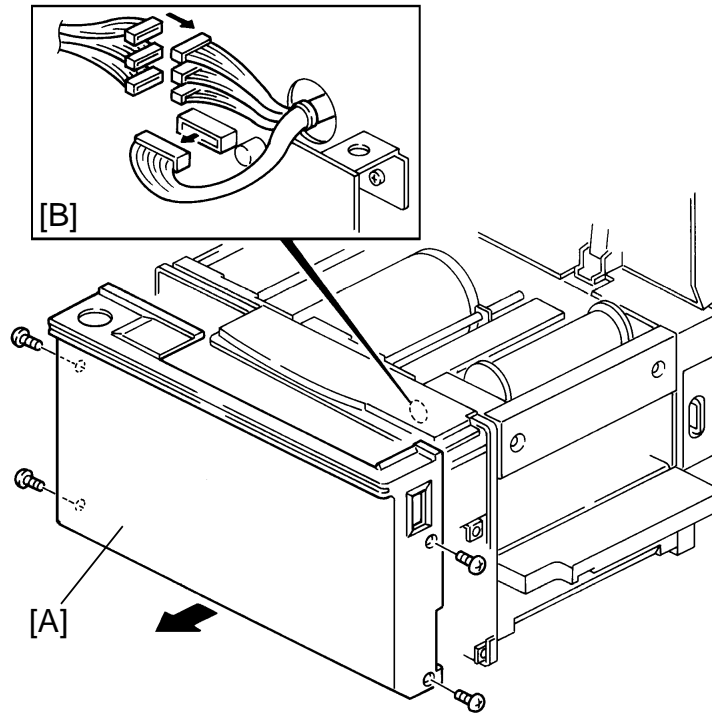


9. Disconnect the connectors [J] from the thermal head.
10. Unhook the pins on non-operation sides of the thermal head bracket [K] through the cutout [L] and remove the bracket (with the thermal head).

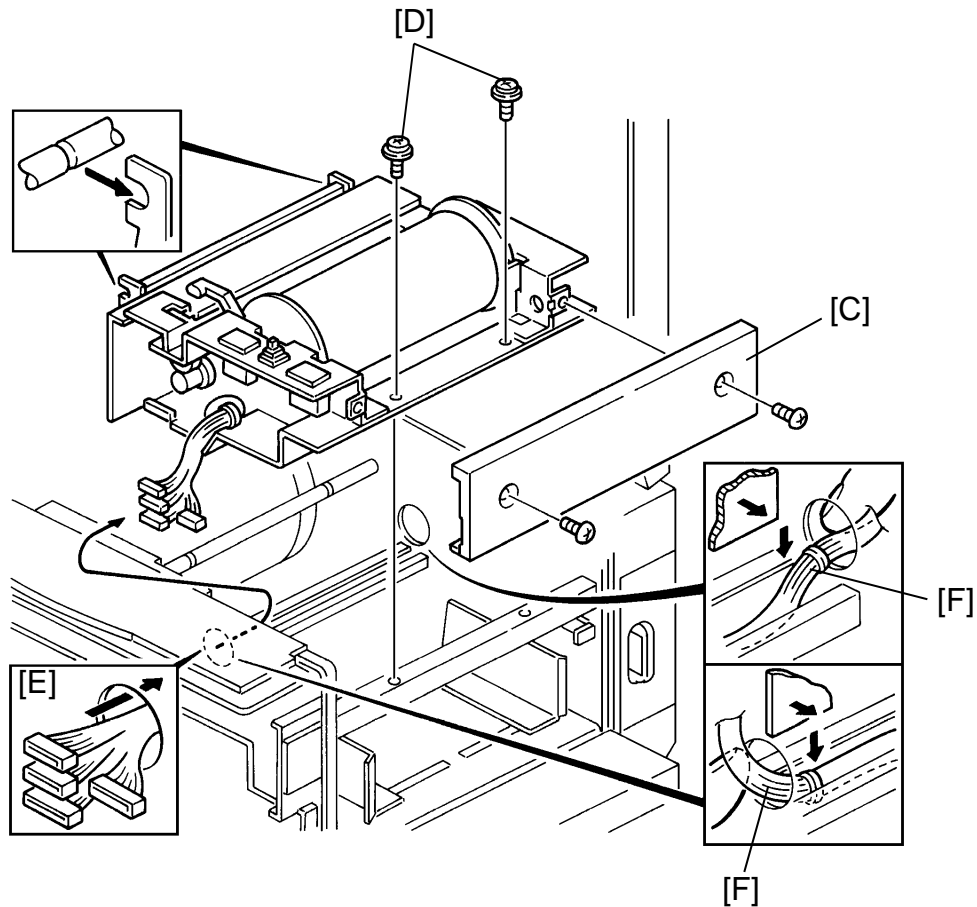
NOTE: The cutout [L] has been newly added (April '96).

11. Remove the two screws and remove the thermal head [M].

3.3 PLOTTER UNIT REMOVAL



1. Turn off the main switch and disconnect the power plug.
2. Remove the front cover [A] (4 screws), then disconnect the connectors [B] of the harnesses from the plotter unit.

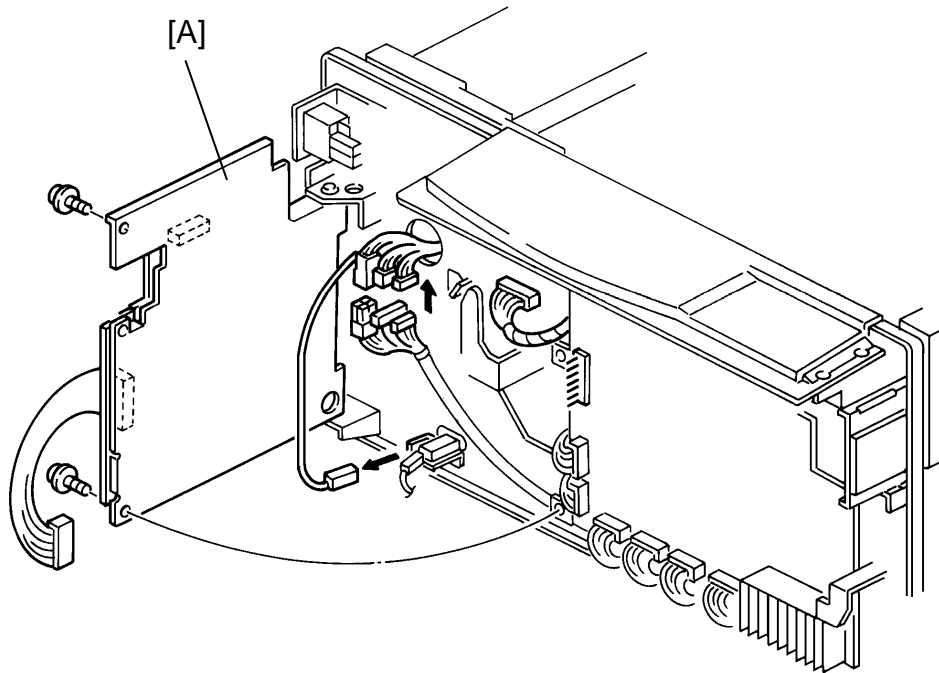


3. Open the scanner unit.
4. Remove the upper right cover [C] (2 screws), and remove the 2 screws [D] securing the plotter unit.
5. While pulling the harnesses [E] from the plotter unit, remove the unit.

CAUTION: Be careful not to damage the harness [F] by the corners of the plotter unit when removing the unit. Also, be careful not to pinch the harness when reinstalling the unit.

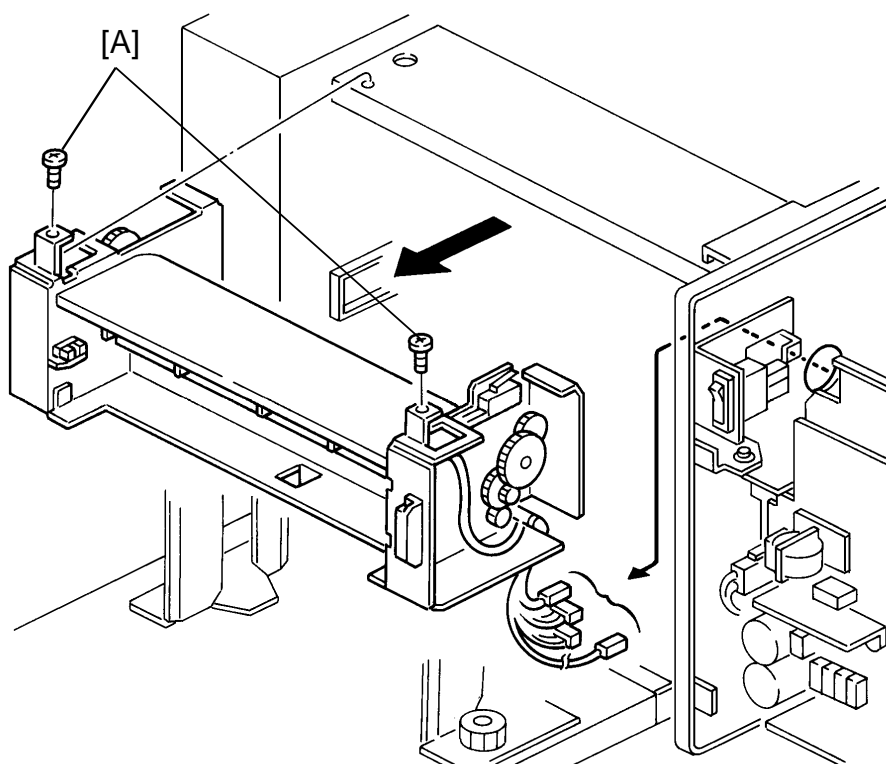
4. MASTER EJECT SECTION

4.1 MASTER EJECT UNIT REMOVAL



1. Turn off the main switch and disconnect the power plug.
2. Remove the front cover (4 screws).
3. Swing out the power supply PCB [A] (2 screws and 4 connectors) and disconnect the 4 connectors to the master eject unit (3 from the main harness and 1 from the safety switch).

Replacement
and
Adjustment

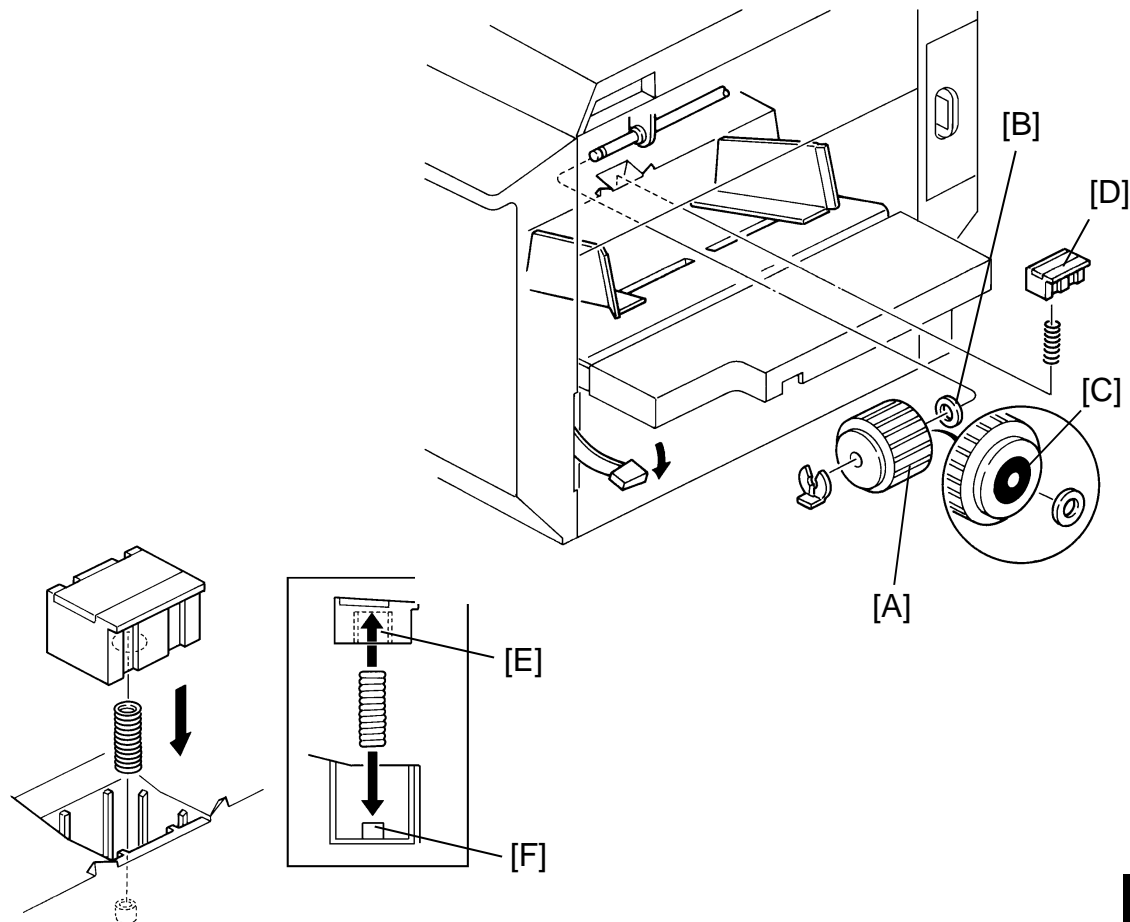


4. Remove the master eject box.
5. Open the scanner unit, and remove the two screws [A] fixing the unit.
6. Remove the master eject unit while pulling the harness out of the cutout of the front frame.

CAUTION: Do not pinch the harnesses when reinstalling the master eject unit.

5. PAPER FEED SECTION

5.1 PAPER FEED ROLLER AND FRICTION PAD REMOVAL



1. Turn off the main switch and disconnect the power plug.
2. Lower the paper table, and remove the paper feed roller [A] (1 snap ring).

CAUTION: 1) Do not lose the small spacer [B] inside the paper feed roller.
2) Install the paper feed roller in the proper direction due to the one-way built-in clutch. The smooth flange [C] faces outside.

3. Remove the friction pad base [D]. Peel off the friction pad and replace it if necessary.

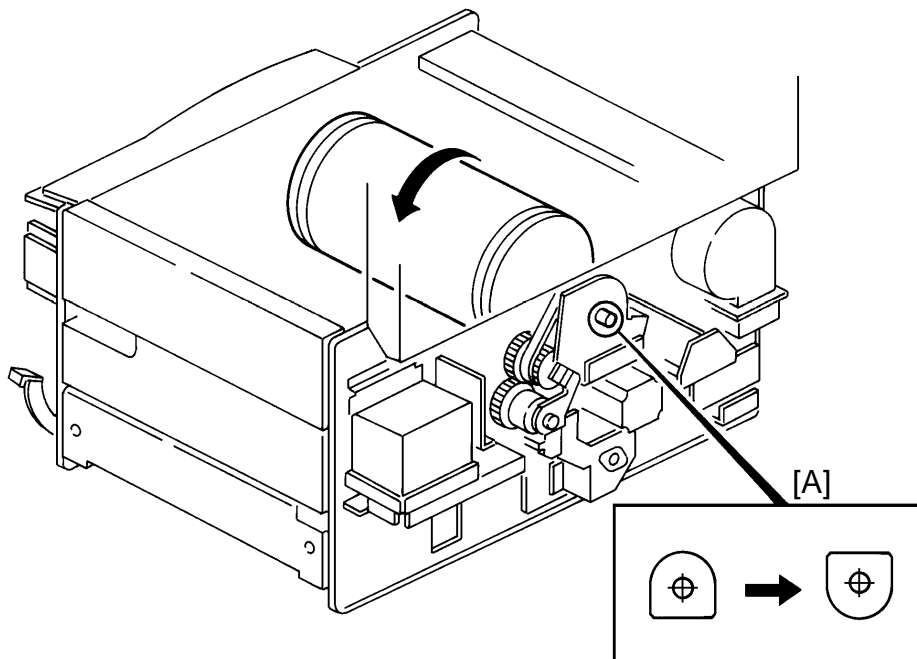
CAUTION: 1) Install the friction pad base in the proper direction as shown. Otherwise, paper misfeeds will occur.
2) Be sure that the hole [E] in the friction pad base and projection [F] in the bottom hold the friction pressure spring properly. Otherwise, paper misfeeds will occur.

6. PRINTING SECTION

6.1 PRESS ROLLER LOCK LEVER ADJUSTMENT

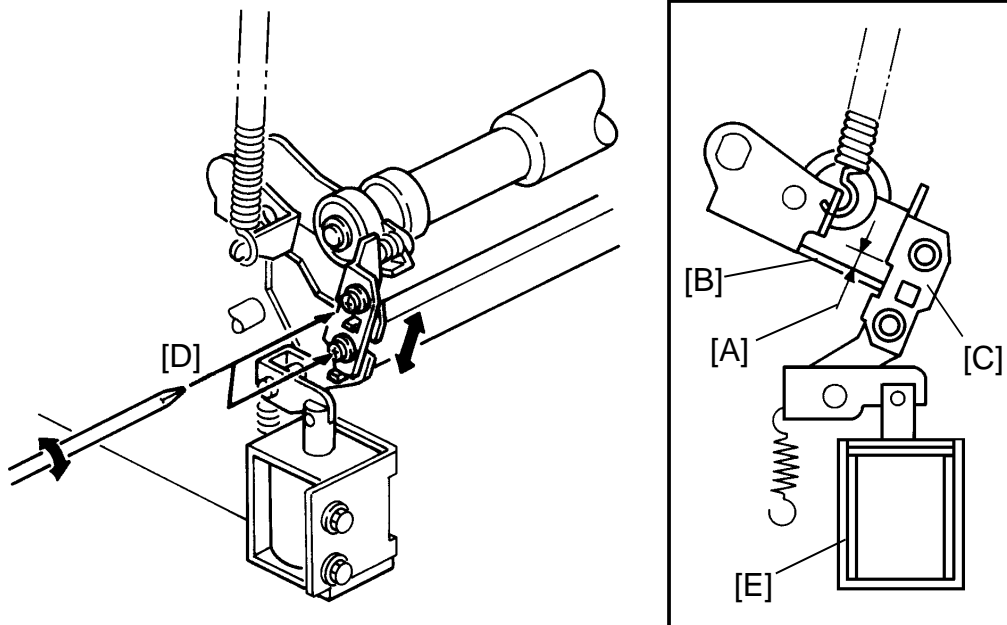
PURPOSE: To maintain the correct clearance between the press roller arms and press roller lock levers. This ensures that the press roller is correctly released and pressed against the drum when the press roller release solenoid is energized.

ADJUSTMENT STANDARD:
Between 1.0 and 1.2 mm



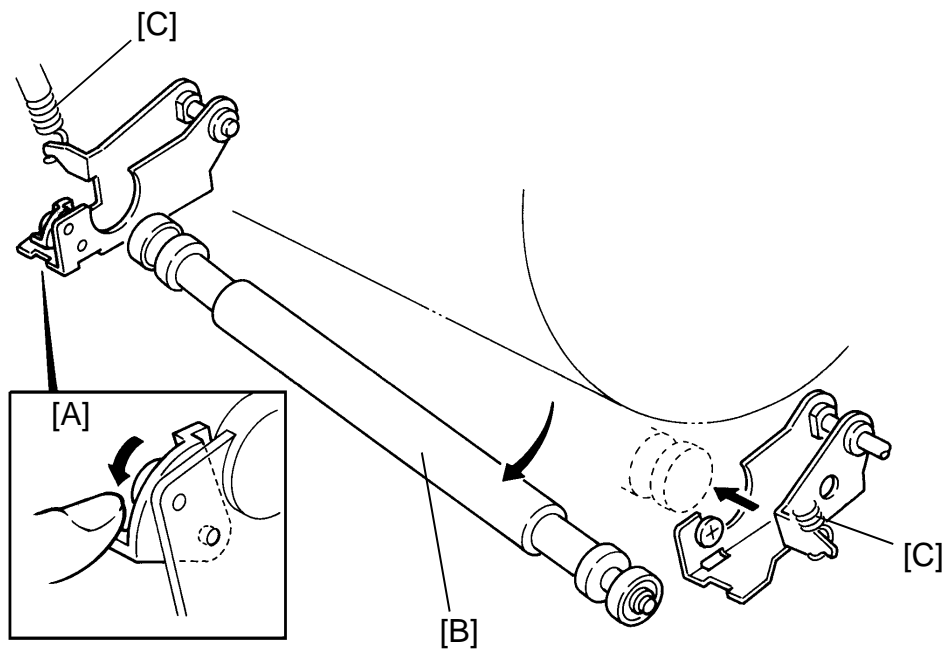
1. Turn off the main switch and disconnect the power plug.
2. Remove the front cover (4 screws) and rear cover (6 screws).
3. Open the scanner unit, and turn the drum manually until the drum master clamper on the drum moves into the bottom most position. (The top of the cams on the drum flanges meet with the cam followers on both ends of the press roller.)

NOTE: To find out the correct position of the drum for the adjustment, refer to the rear end of the drum shaft. The round part of the shaft must face to the bottom as shown [A].



4. Using a thickness gauge, measure the clearance [A] between the press roller arm [B] and press roller lock lever [C] (rear side). It should be between 1.0 and 1.2 mm.
5. If it is not correct, adjust the position of the press roller lock lever after loosening the two screws [D].
6. Swing out the power supply PCB (2 screws and 4 connectors).
7. Repeat steps 5 and 6 for the front side.
8. After finishing the adjustment, make sure that the press roller lock levers are released from the press roller arms by pressing the plunger of the press roller release solenoid [E] manually.

6.2 PRESS ROLLER REMOVAL



1. Turn off the main switch and disconnect the power plug.
2. Remove the drum unit. (Refer to "7.6 DRUM UNIT REMOVAL.")
3. Release the press roller lock lever [A].
4. Slightly slide the press roller [B] toward the rear and remove it.

CAUTION: Take caution to avoid possible injury. If the printing pressure springs [C], which pull the press roller up, are not removed, the press roller may suddenly move by accident when the lock levers are unhooked.

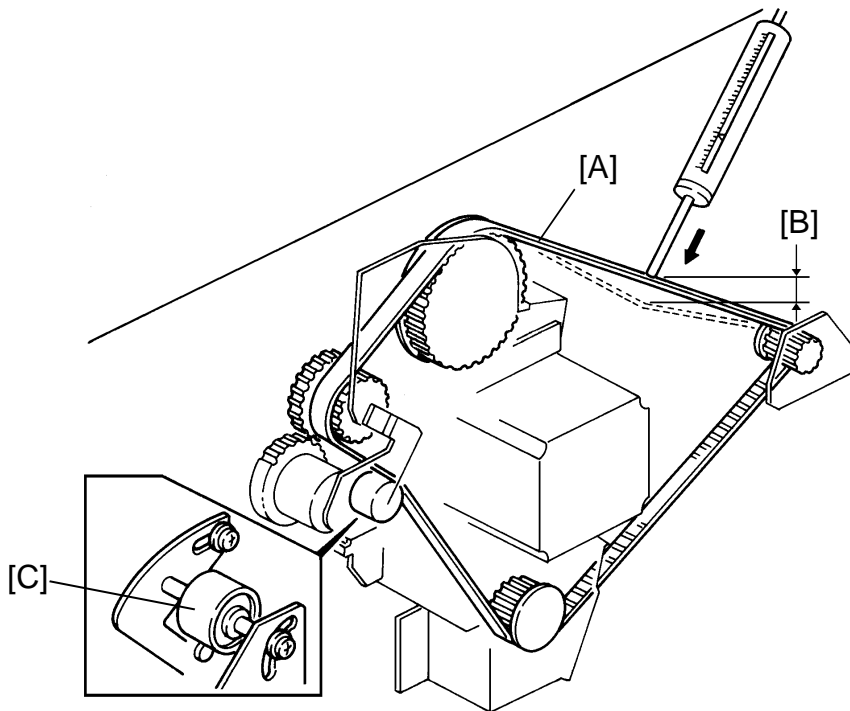
7. DRUM, DRUM DRIVE, AND INK SUPPLY SECTION

7.1 DRIVE BELT TENSION ADJUSTMENT

PURPOSE: To ensure that the main motor rotation is correctly transmitted to the drum and each paper feed roller.

ADJUSTMENT STANDARD:

Between 2.8 and 3.0 mm deflection at 570-gram load.



1. Turn off the main switch and disconnect the power plug.
2. Remove the rear cover (5 screws).
3. Using a tension gauge, apply a 570-gram load to the center of the drive belt [A]. Make sure that the belt deflects between 2.8 and 3.0 mm [B].
4. If it does not deflect within this amount, adjust the position of the belt tightener [C] after loosening the screws.

NOTE: The 2nd feed motor bracket helps to maintain the drive belt tension. Do not remove the motor bracket when the drive belt tension is adjusted.

7.2 DOCTOR ROLLER GAP ADJUSTMENT

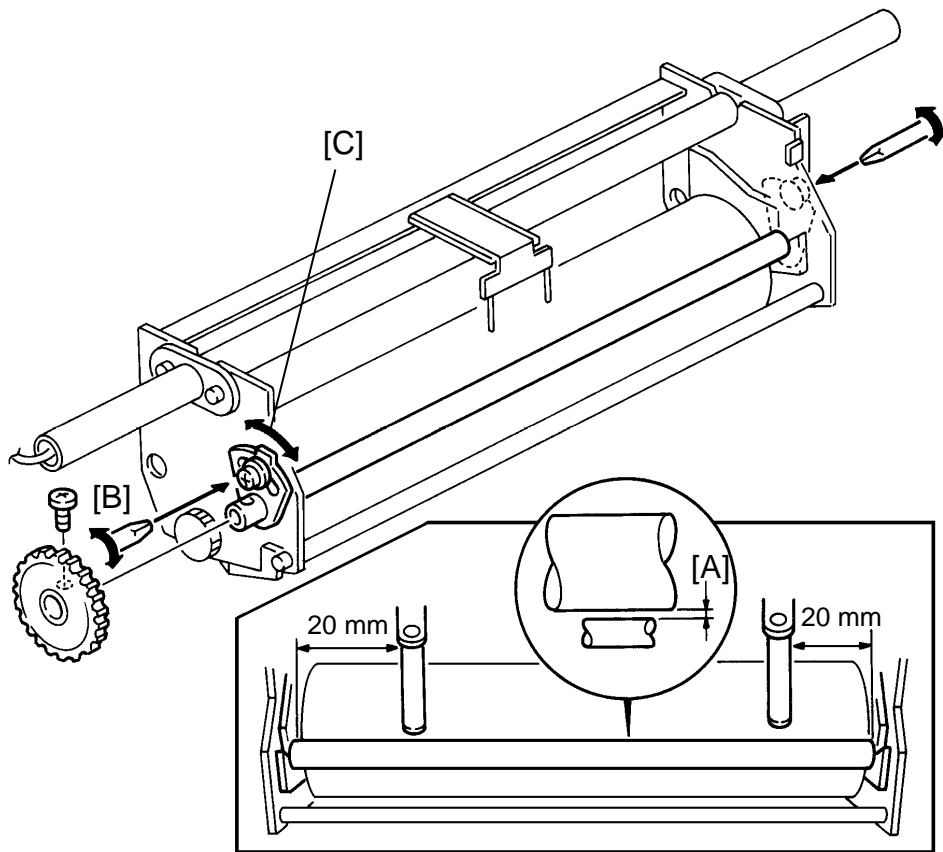
PURPOSE: To control the ink thickness around the ink roller.

ADJUSTMENT STANDARD:

0.08 (± 0.01) mm

CAUTION: Normally the doctor roller gap is not adjusted or changed. It tends to be difficult to change in the field. If the gap becomes narrower, an uneven image may appear on the prints. If it becomes wider, too much ink will be applied to the drum screens, resulting in ink leakage from the drum.

1. Remove the ink cartridge and make prints until the ink end indicator lights in order to remove ink from inside the drum.
2. Turn off the main switch and disconnect the power plug.
3. Remove the drum unit, then remove the ink roller unit. (Refer to "**7.8 INK ROLLER UNIT REMOVAL.**")
4. Wipe off the ink around the ink roller and doctor roller.



5. Make sure that a 0.08 mm gap gauge goes through the gap [A] between the ink and doctor rollers, and that a 0.09 mm gap gauge does not.

NOTE: 1) The gap should be checked at both ends of the doctor roller. Insert a gap gauge approximately 20 mm from the front or rear end of the roller, then repeat for the other side.
 2) While the gap gauge is inserted, hold the doctor and ink rollers with your fingers in order to stop the rollers from rotating.

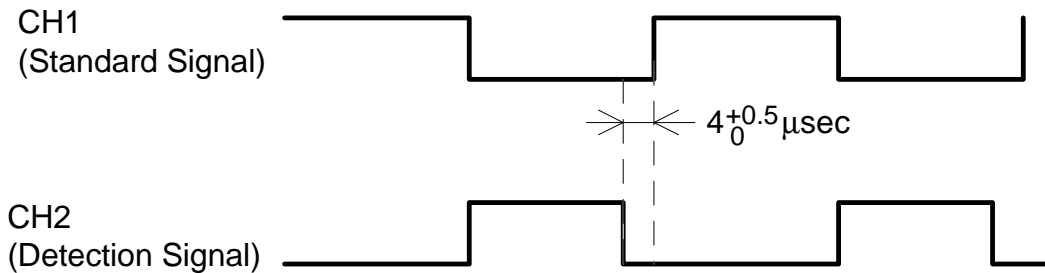
6. If the gap is out of the standard, loosen the screw [B] and adjust the gap by turning the eccentric cam bushing [C] for the front and rear each.

NOTE: For the gap adjustment, insert a 0.08 mm gap gauge in between the rollers. Then, turn the eccentric cam bushing until the doctor roller lightly touches the gap gauge. Repeat this procedure twice each for the front and rear of the rollers. Finally repeat step 5 to check the gap.

7.3 INK DETECTION ADJUSTMENT

PURPOSE: To ensure that the ink detection circuit detects a no ink condition.

ADJUSTMENT STANDARD: See the below illustration.



CAUTION: This adjustment is required when the main PCB has been replaced.

1. Remove the ink cartridge and make prints until the ink end indicator lights in order to remove ink inside from the drum.
2. Turn off the main switch and disconnect the power plug.
3. Remove the front cover (4 screws).
4. Connect CH1 probe of an oscilloscope to TP102, CH2 probe to TP103, and grounding leads of both probes to TP101 (–12 volts). Select the 5 microsecond range on the oscilloscope.

NOTE: The test pins (TP's) are located on the upper left corner of the main PCB.

5. Connect the power plug and turn on the main switch.
6. Make sure that the waveform is as shown in the illustration while the ink end indicator lights.

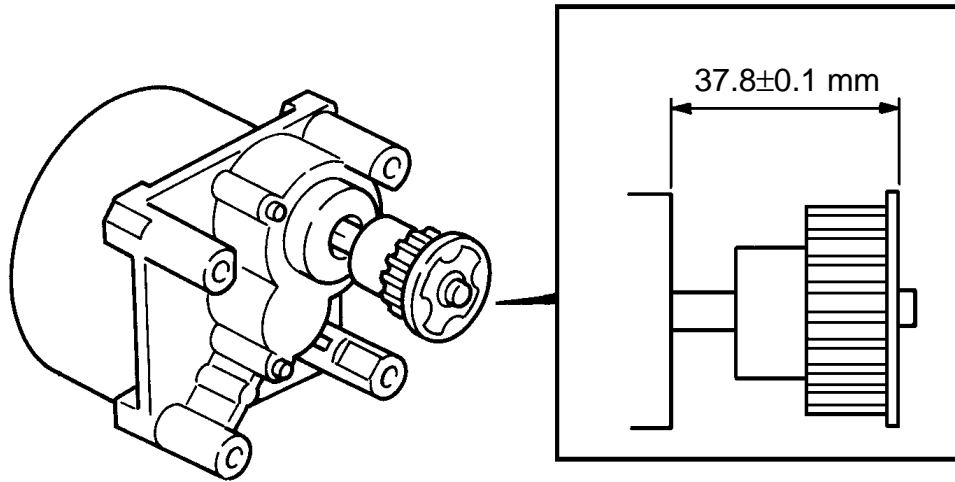
NOTE: This adjustment should be done under normal room temperature (approximately 20°C). The period of the waveform for the detection signal varies inversely with temperature. (If the temperature becomes higher, the period is reduced, and vice versa.)

7. If it is not correct, adjust the ON timing of the detection signal by turning VR101 beside the test pins.

NOTE: If the standard signal is delayed from the detection signal, the machine cannot detect the no ink condition. In such case, LED101 on the main PCB lights to warn of this.

7.4 MAIN MOTOR REPLACEMENT

Rev. 10/20/93

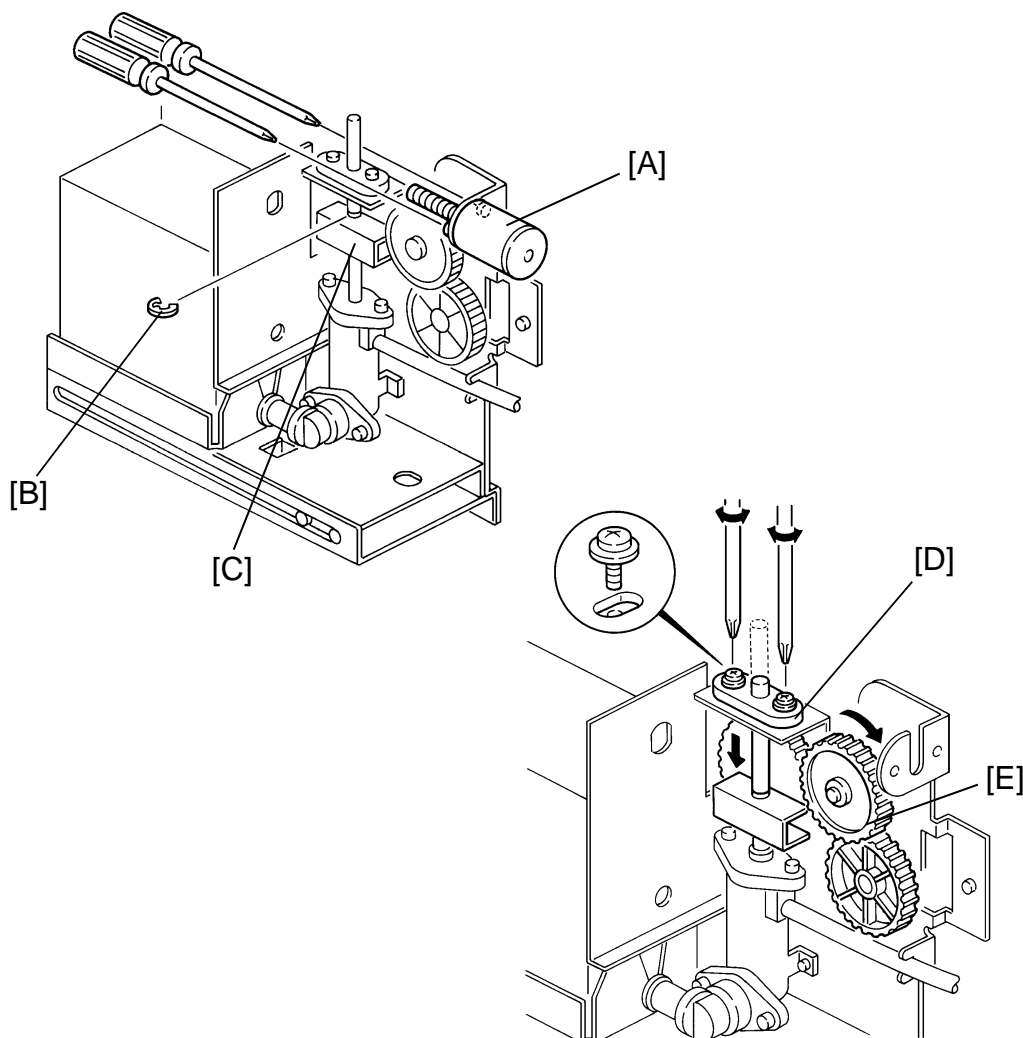


When the pulley is installed onto the main motor shaft, refer to the above illustration for the position of the pulley.

Replacement
and
Adjustment

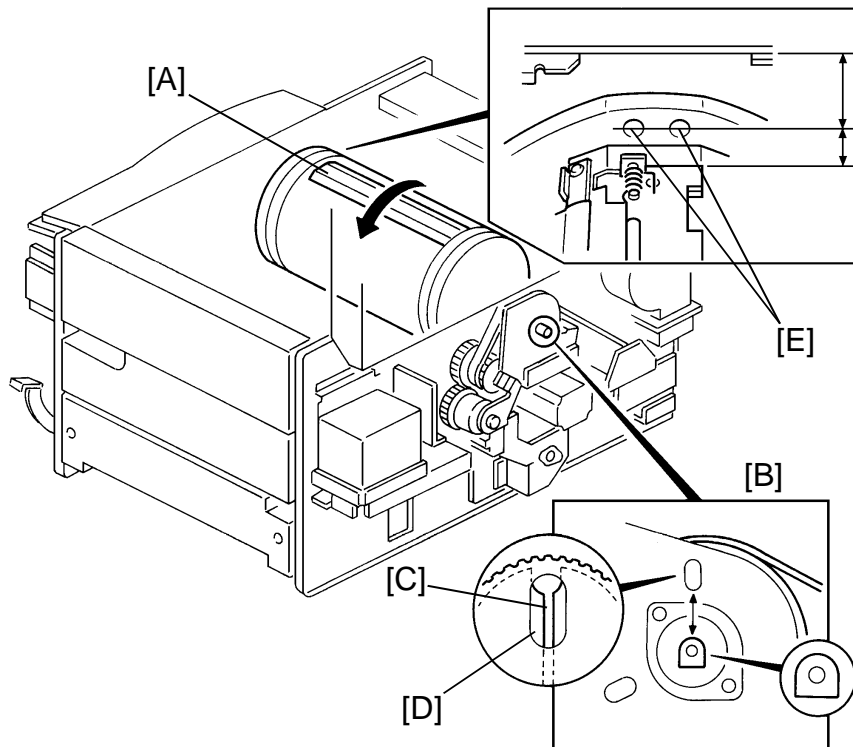
7.5 INK PUMP PLUNGER POSITION ADJUSTMENT

PURPOSE: To ensure the smooth operation of the ink pump plunger by properly positioning its bearing.



1. Turn off the main switch and disconnect the power plug.
2. Remove the rear cover (6 screws), and then remove the ink supply motor [A] (2 screws).
3. Remove the E-ring [B] to free the plunger from the pump drive slider [C].
4. Loosen the two screws securing the bearing [D]. (Do not remove the bearing.)
5. By turning the gear [E] manually, move the plunger until it reaches the bottom.
6. While holding the bearing [D] with your fingers, re-tighten the two screws.
7. Reinstall the E-ring [B].

7.6 DRUM UNIT REMOVAL

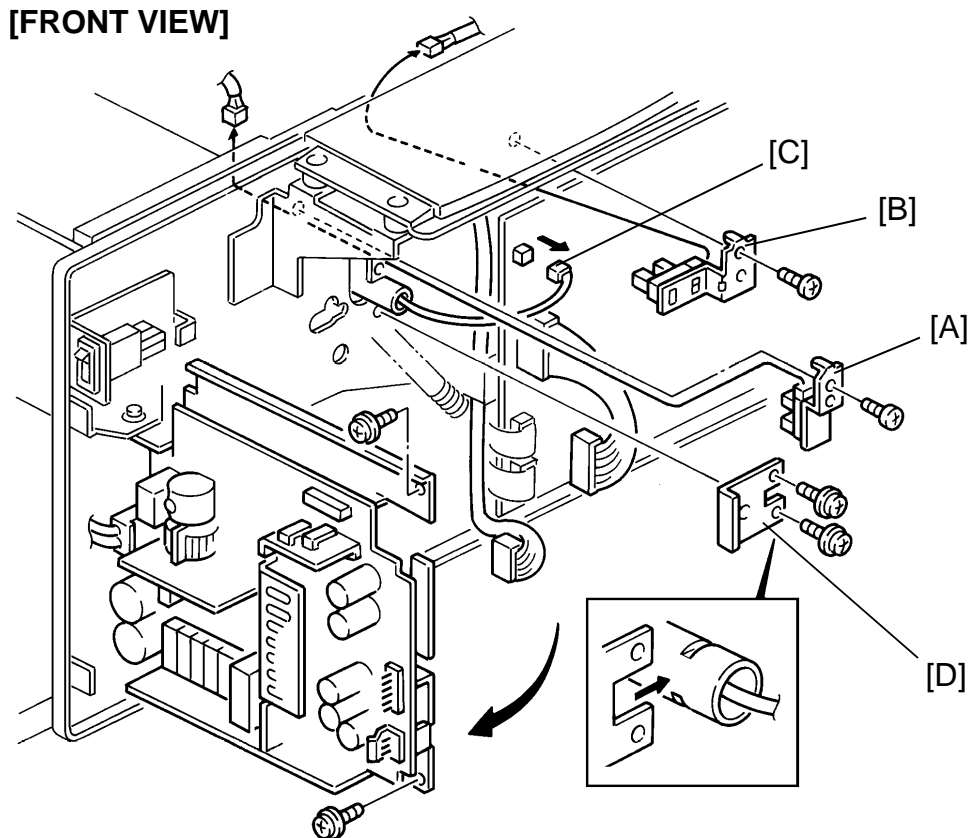


1. Remove the ink from inside the drum by disabling the ink detection circuit. The ink detection circuit can be disabled if the main switch is turned on while both the Auto Cycle key and the Reset key are pressed. If this mode is accessed, prints can be made even though the ink detection pin is not in contact with the ink on the ink roller (see page 2-26 Ink Supply Control). When the main switch is turned off, this condition is reset to normal operation.
2. Turn off the main switch and disconnect the power plug.
3. Remove the front cover (4 screws) and rear cover (6 screws).
4. Open the scanner unit, and turn the drum manually until the drum master clammer [A] on the drum moves into the top most position.

NOTE: To find out the correct position of the drum for the above, refer to the rear end of the drum shaft. When the drum master clammer is positioned exactly at the top, the round part of the shaft faces the long hole as shown [B]. (The rib [C] of the drum drive pulley will meet the long hole [D].)

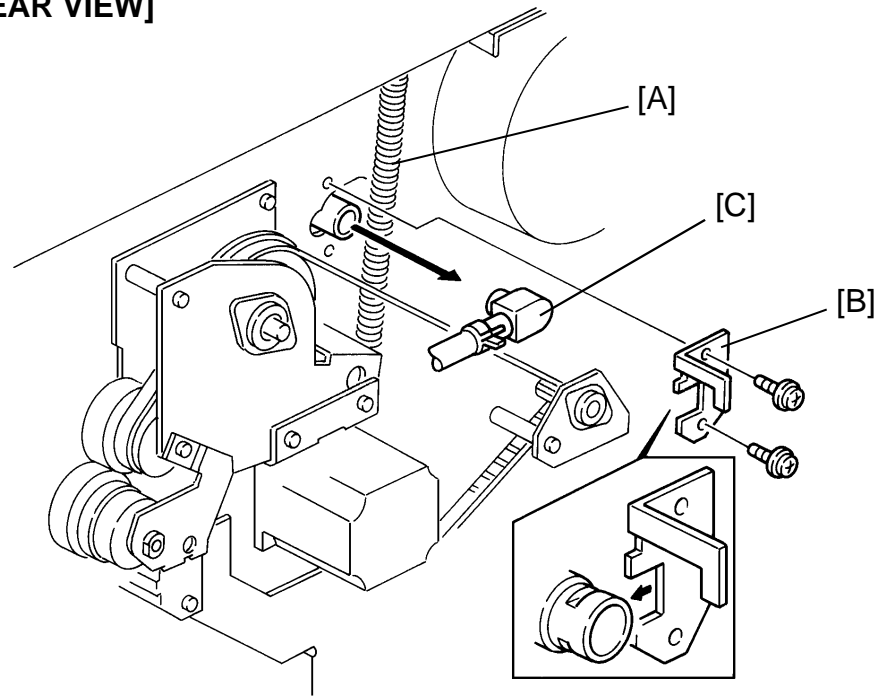
(Refer to page 5-32 for drum caution.)

CAUTION: When reinstalling the drum unit, install it so that the two holes [E] are parallel with the top edge of the front frame. They should be facing exactly up. The drum drive gear at the drum unit side must be engaged at the correct position with the other at the main body side. (If the gears do not meet each other correctly, the upper 2nd feed roller will not be driven properly and paper misfeed will occur. This is because the upper 2nd feed roller moves up and down by the cam mounted on the drum drive gear.)



5. Swing out the power supply PCB (2 screws and 4 connectors). Remove the feed start timing sensor [A] and feed jam timing sensor [B] (1 screw and connector each).
6. Remove the front printing pressure spring.
7. Disconnect the connector [C] from the main PCB.
8. Remove the front drum shaft fixing plate [D] (2 screws).

[REAR VIEW]

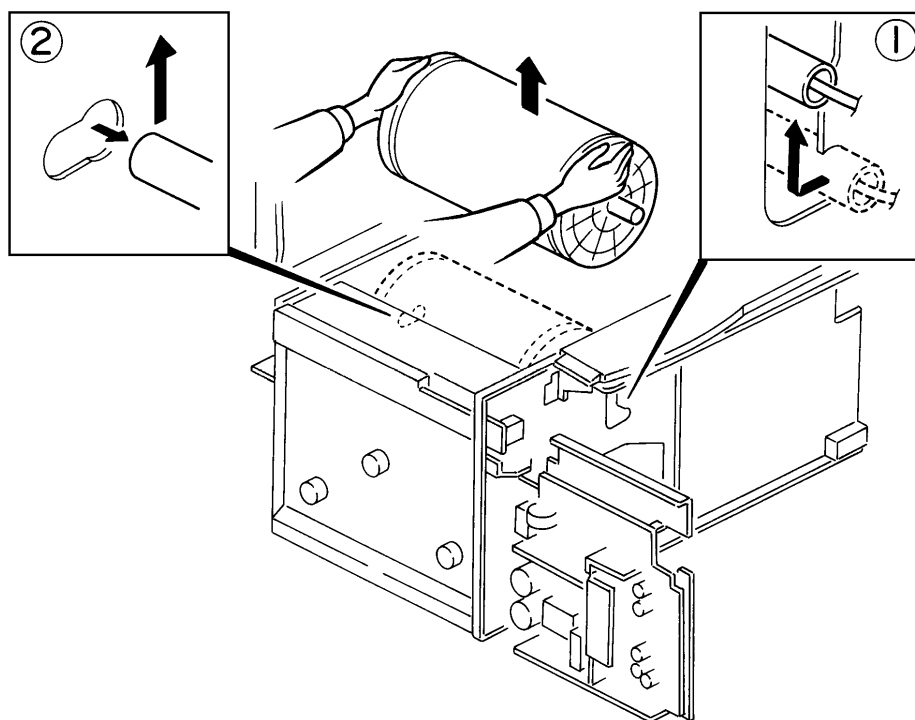


8. From the rear of the machine, remove the rear printing pressure spring [A].

CAUTION: 1) Securely hold the drum unit with your hand when you remove the front and rear drum shaft fixing plates. Otherwise, the drum drive gears may be disengaged and the drum will accidentally turn.
2) When installing the front and rear drum shaft fixing plates, install the front first to obtain the correct position of the drum shaft. Place the projection on the front drum shaft fixing plate in the hole within the frame before tightening the screws.

Replacement
and
Adjustment

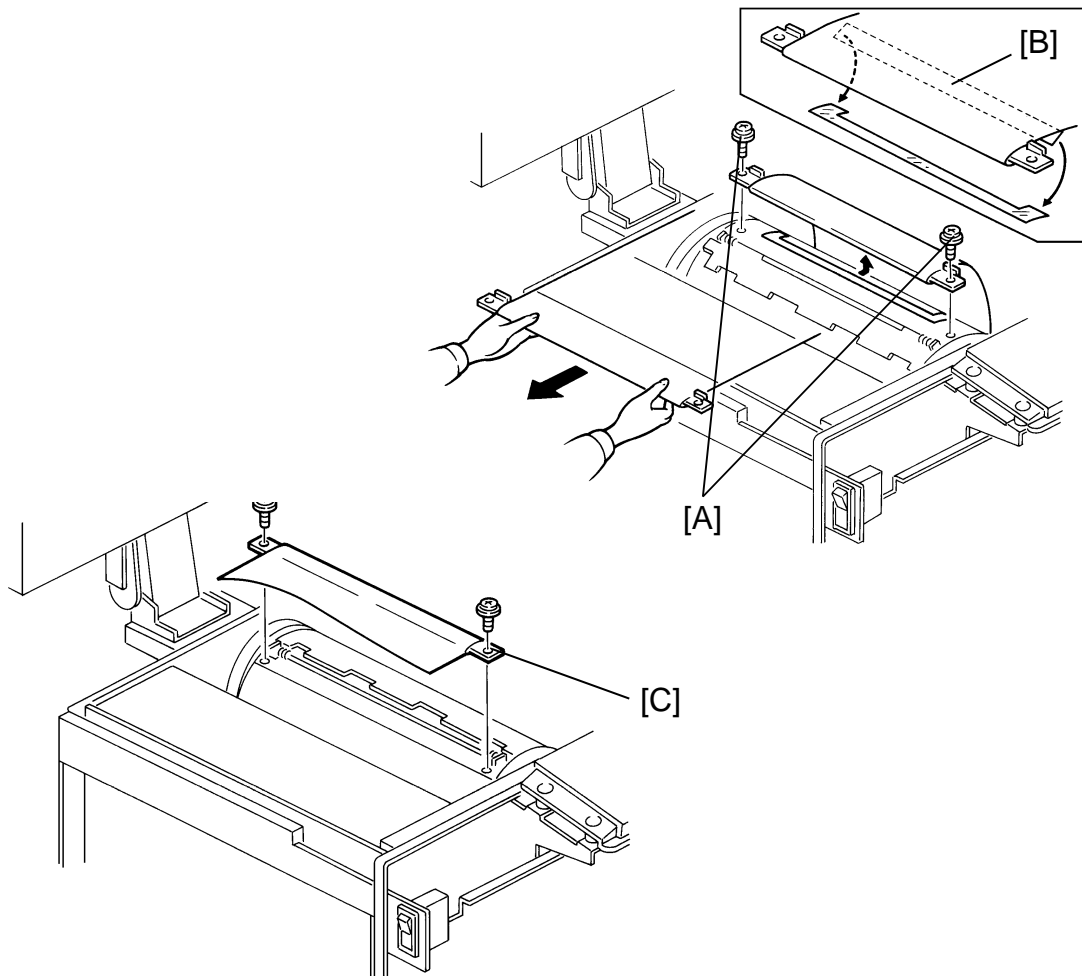
9. Remove the rear drum shaft fixing plate [B].
10. Pull out the ink supply nozzle [C].



11. While lifting the front side of the drum up, remove the drum unit as shown.

CAUTION: 1) Do not loosen the spacer installed on the rear of the drum shaft.
2) Do not touch the front drum flange against the sensors to avoid any damage.
3) Do not deform the sensor actuator that is mounted on the edge of the front drum flange.
4) Do not scratch the drum surface.

7.7 DRUM SCREEN REMOVAL

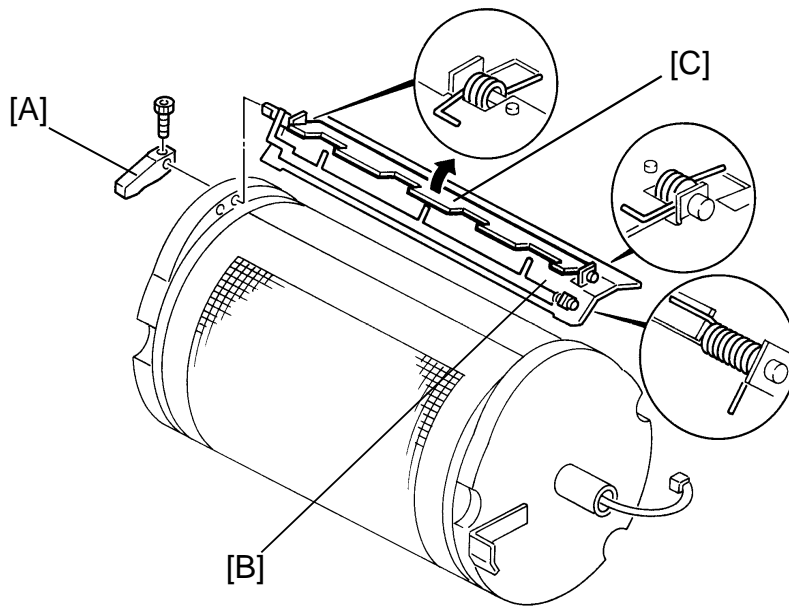


1. Turn off the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Remove the two screws [A] securing the rear screen holder.
4. While turning the drum manually, pull out the drum screen as shown.

CAUTION: 1) The mylar strip [B] is inserted under the mylar strip on the drum side. Unhook the mylar strip in order not to damage it before pulling out the drum screen.
2) When reinstalling the drum screen, do not forget to set the mylar strip as it was. (The two strips of mylar are to prevent ink from leaking from the trailing edge of the master that wraps around the drum.)

5. Remove the front screen holder [C] (2 screws), then remove the drum screen.

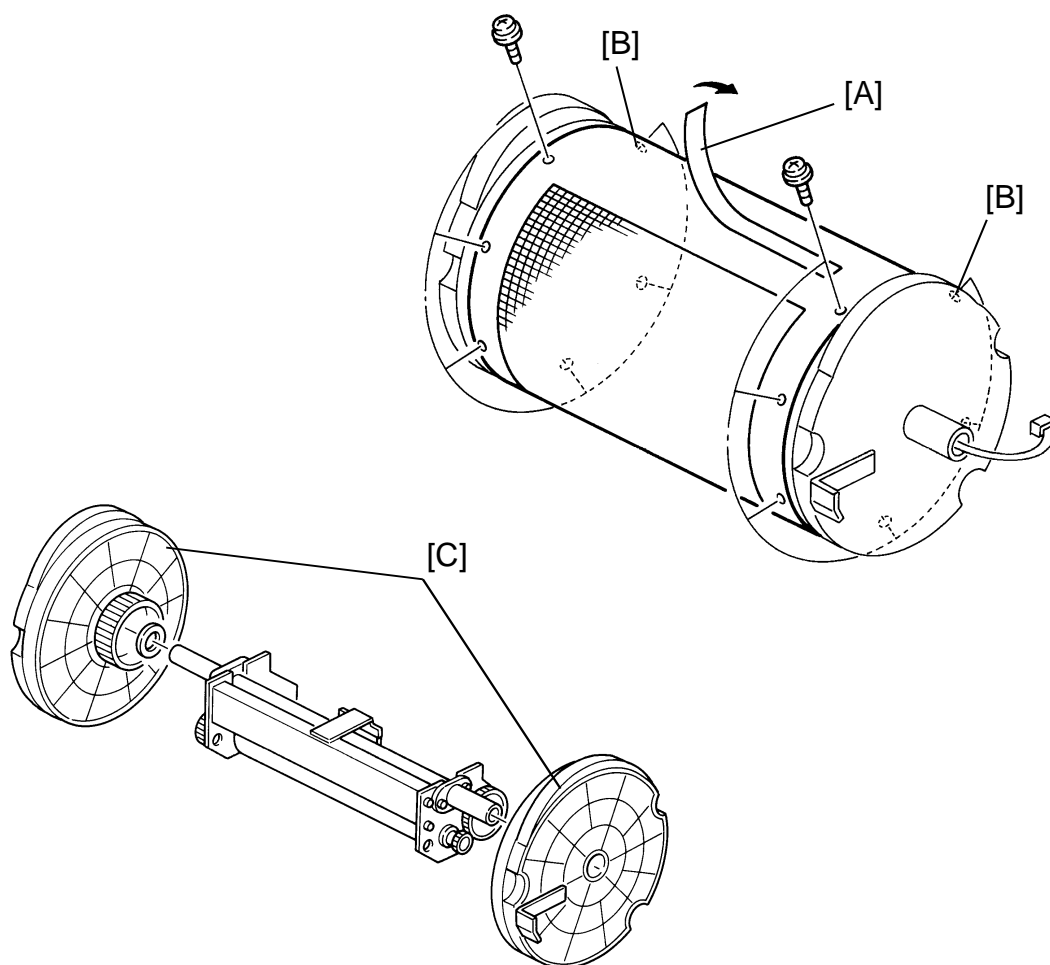
7.8 INK ROLLER UNIT REMOVAL



CAUTION: Never disassemble the ink roller unit. Each part between the front and rear side plates of this unit has been exactly adjusted to keep the doctor and ink rollers parallel against the drum shaft in the production.

1. Turn off the main switch and disconnect the power plug.
2. Remove the drum screen. (Refer to "7.7 DRUM SCREEN REMOVAL.")
3. Remove the drum unit. (Refer to "7.6 DRUM UNIT REMOVAL.")
4. Remove the clamber open lever [A], then remove the drum master clamber [B] while opening the clamping plate [C].

CAUTION: 1) Position the springs (two on the front and one on the rear) as shown when reinstalling the drum master clamber.
2) Do not allow the inside of the clamping plate [C] to become dirty with ink. If it is dirty with ink, the master may slip off and the image position on the prints will move toward the trailing edge of the print during a printing run.
3) Use a cloth dampened with water to clean the inside of the clamping plate [C]. Never use alcohol or other solvents. The clamping force by magnet may be weakened.



5. Peel off the tape [A], and remove the metal screen (12 screws).

CAUTION: 1) The length of the 4 screws fixing the drum master clumper is longer than that of the 12 screws fixing the metal screen, although they are similar in appearance. Be careful not to mix them up or use the wrong screws.

2) When installing the metal drum screen, fix the trailing edge first with the 2 screws. Then, tighten the other screws while removing the slack from the screen. (The two holes [B] on the trailing side are round holes and the other holes are long holes to allow for the removal of the slack.)

6. Remove the front and rear drum flanges [C].

8. PAPER DELIVERY SECTION

8.1 EXIT PAWL CLEARANCE ADJUSTMENT

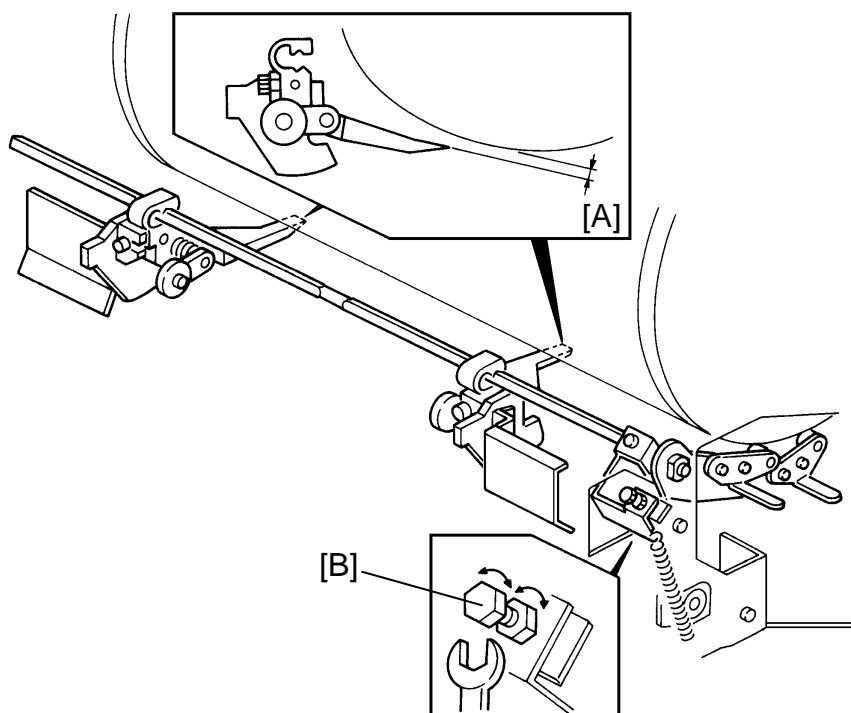
PURPOSE: If the clearance is too narrow, the exit pawls may hit the drum screen and damage it. If it is too wide, paper may easily be wrapped around the drum.

ADJUSTMENT STANDARD:
0.8 (± 0.2) mm

CAUTION: When this adjustment has been performed, check the exit pawl drive timing. (Refer to "8.2 EXIT PAWL DRIVE TIMING ADJUSTMENT.")

1. Turn off the main switch and disconnect the power plug.
2. Open the scanner unit, and make sure that the drum master clasper on the drum faces to the top. (This means that the exit pawls are in the closest position to the drum surface.)

NOTE: The exit pawls move apart from the drum surface only when the drum master clasper passes the exit pawls.
3. Remove the front cover (4 screws) and swing out the power supply PCB (2 screws and 4 connectors).
4. Remove the air knife chamber (2 screws).

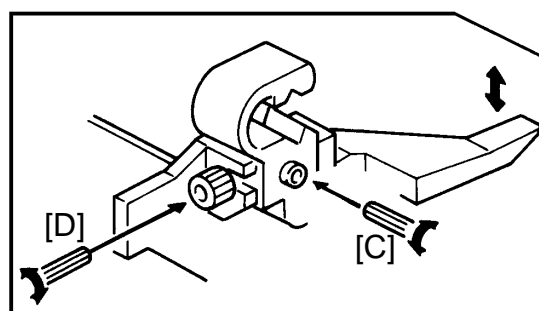


5. Using a gap gauge, measure the clearances [A] between the drum surface and the exit pawls. It should be 0.8 mm. There is allowance for a 0.2 mm difference.
6. If the clearance is not correct, loosen the lock nut. Then adjust the clearance by turning the bolt [B].

NOTE: The clearance for the front and rear exit pawls can be changed separately as follows:

- 1) Loosen the lock screw [C].
- 2) Adjust the exit pawl position by turning the bolt [D].

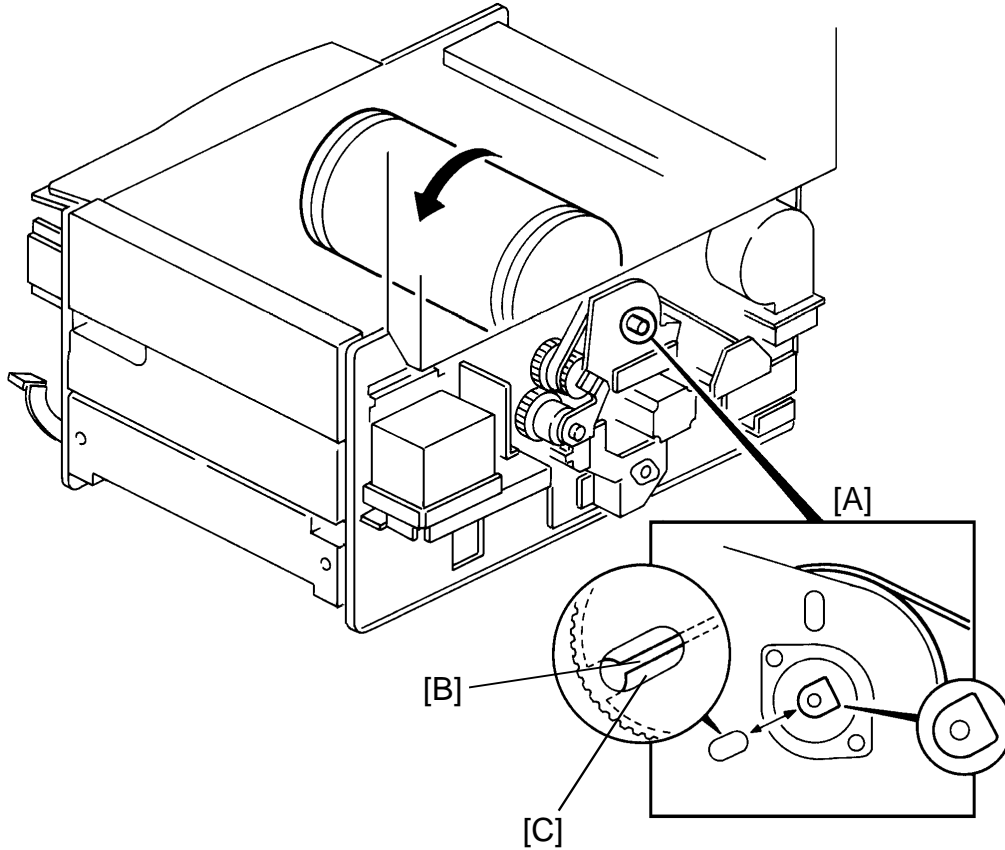
This adjustment should be done only when the clearances for the two exit pawls are different from each other. Normally this is adjusted during production. Adjust the clearance by following steps 1 to 6 above.



8.2 EXIT PAWL DRIVE TIMING ADJUSTMENT

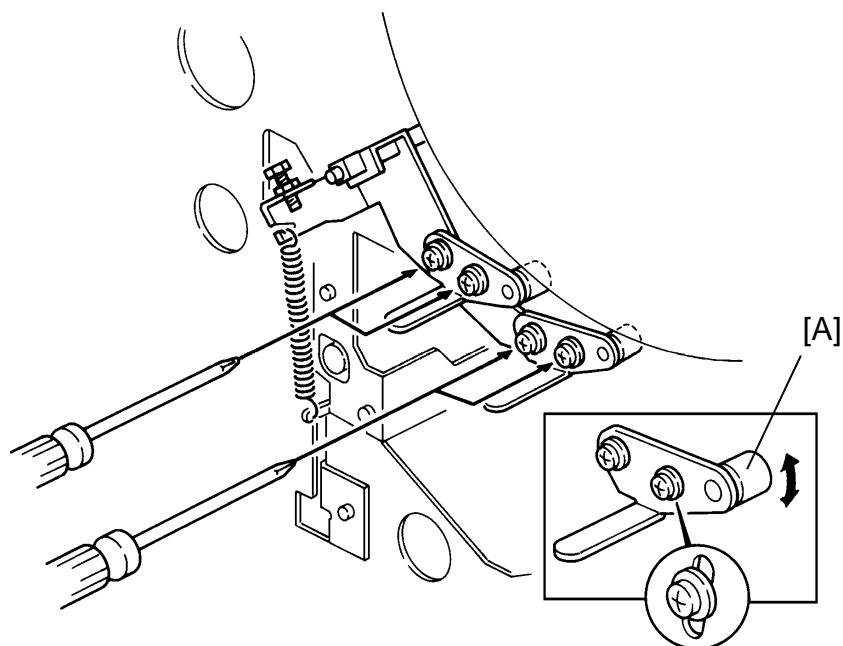
PURPOSE: To ensure that the exit pawls move and escape the drum master clamper while the drum is rotating.

ADJUSTMENT STANDARD:
0 to 0.5 mm



CAUTION: Before this adjustment, the exit pawl clearance from the drum must be checked. (See "8.1 EXIT PAWL CLEARANCE ADJUSTMENT".)

1. Turn off the main switch and disconnect the power plug.
2. Remove the front cover (4 screws) and rear cover (6 screws).
3. Open the scanner unit. By referring to the rear end of the drum shaft, turn the drum manually until the round part of the shaft faces the long hole as shown [A]. (The rib [B] of the drum drive pulley will meet the long hole [C].)

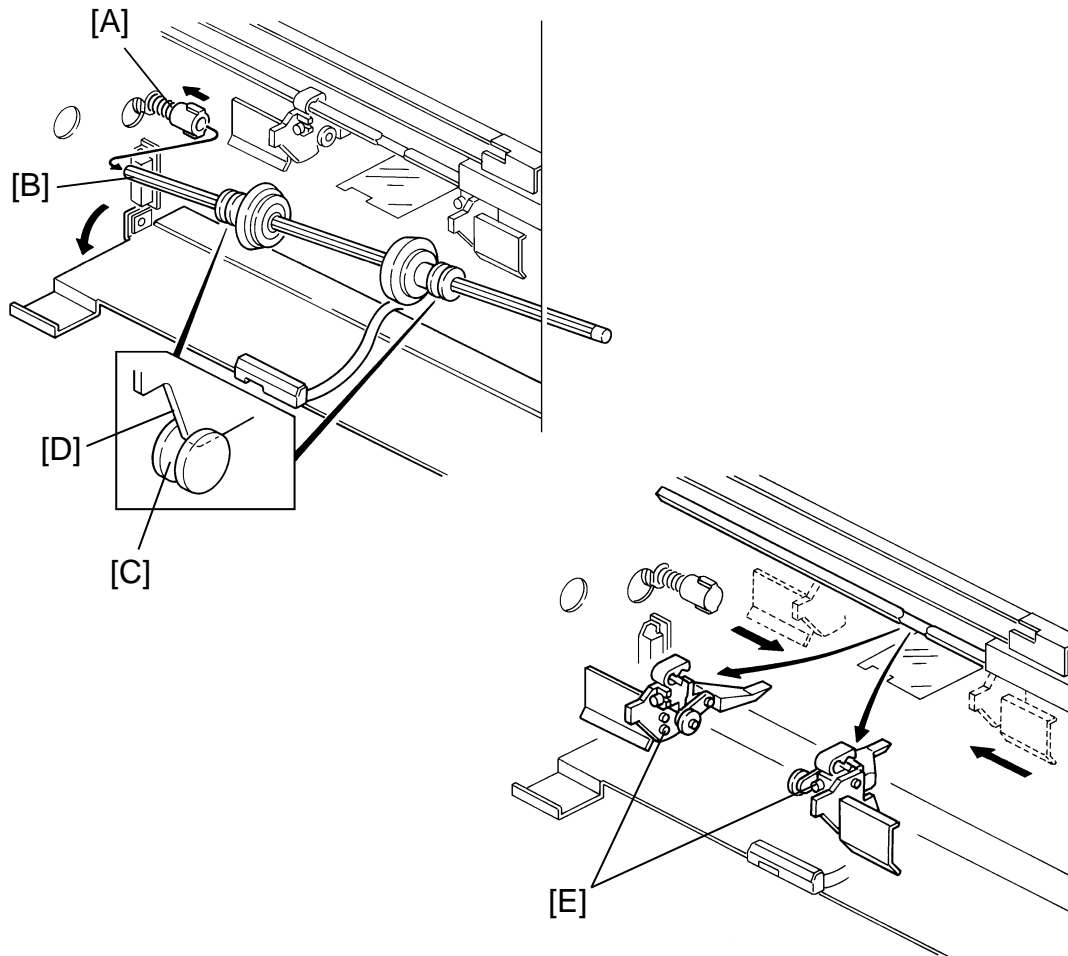


4. Swing out the power supply PCB (2 screws and 4 connector).
5. For each cam follower, measure the gap between the cam follower and cam face. It should be 0 to 0.5 mm.
6. If the gap is not correct, loosen the two screws and adjust the cam follower position [A].

CAUTION: Do not push the cam followers to strongly against the cam.

7. After adjustment, turn the drum manually and be sure that the exit pawls move properly to escape the drum master clamber.

8.3 EXIT ROLLER AND EXIT PAWL REMOVAL



1. Turn off the main switch and disconnect the power plug.
2. Remove the air knife camber (2 screws).
3. Open the paper delivery fence.
4. While pushing the joint [A] to the rear, remove the shaft [B] with the lower exit rollers.
NOTE: When installing, be sure to meet the grooves [C] of the lower rollers with the plates [D] beside the upper rollers.
5. Slide the exit pawl assemblies [E] to the middle of the shaft, which is the the thinnest area, for removal.

CAUTION: Do not disassemble the exit pawl assembly. If it is disassembled, the clearance between the exit pawl and the drum must be checked after reinstallation.

9. OPTICS SECTION

9.1 OVERVIEW

Double check all optics adjustments, because these adjustments influence each other.

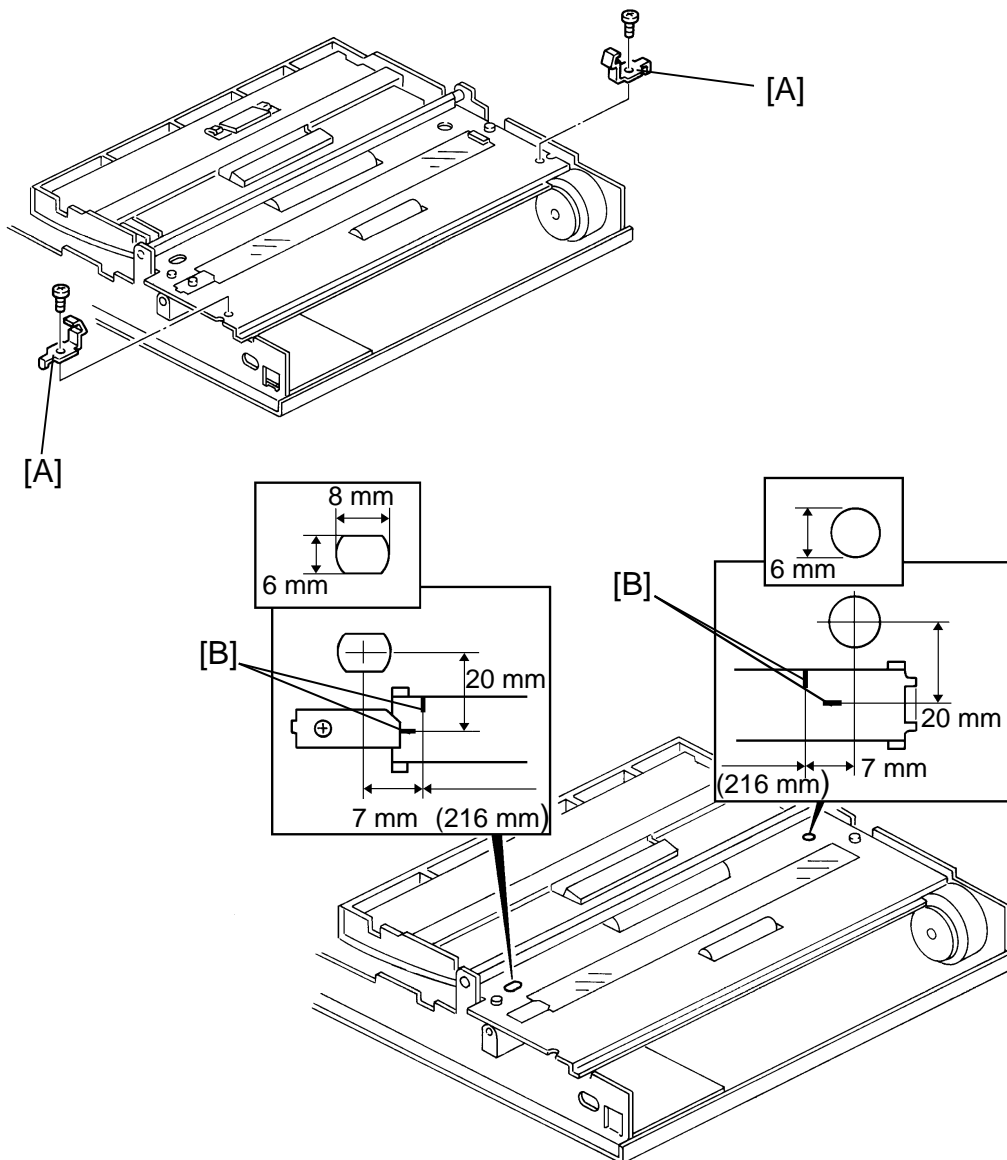
The following table shows the reciprocal relationship between the adjustment procedures. The "O" indicates those items that must be checked (check items) after items in the left column (adjustment item) is adjusted.

Check Item Adjustment Item	White Level	Scanning Line Position	Scanning Start Position	Focus (MTF)	Magnification Ratio
White Level					
Scanning Line Position	O		O		
Scanning Start Position	O	O			
Focus (MTF)					O
Magnification Ratio	O	O	O	O	

* Necessary Tools

- 1) Facsimile Test Chart R-21 (P/N 99992131)
- 2) Oscilloscope

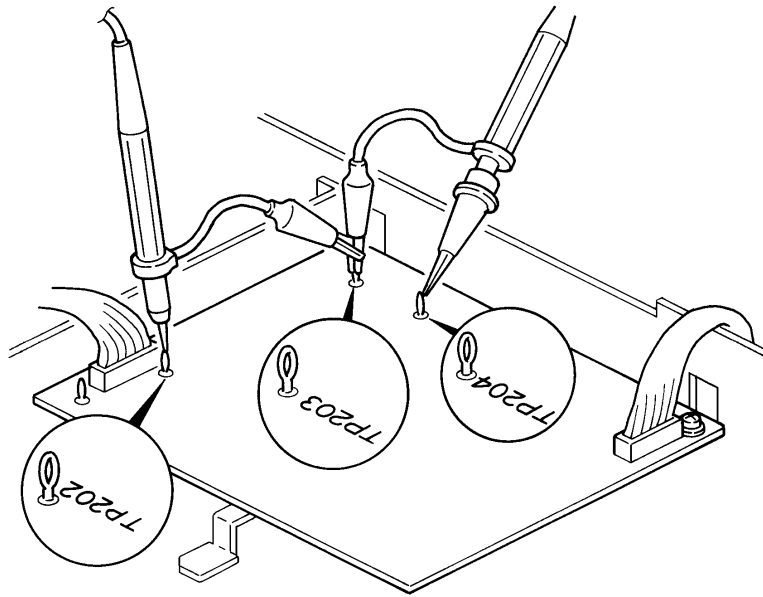
9.1.1 Preparation For Adjustment



1. Turn off the main switch and disconnect the power plug.
2. Remove the scanner cover (4 screws).
3. Remove the ADF lock plates [A] (1 screw each).
4. Put two marks [B] on each side of the exposure glass.

NOTE: The marks on the operation side are used for the scanning start and line position adjustments, and those on the other side are used for the magnification adjustment.

The marks are to correctly place the test chart so that the CCD scans 216 mm of the line on the test chart.



Oscilloscope	Test pin
Channel 1 (Scanning line trigger)	TP204
Channel 2 (CCD video data)	TP202
GND	TP203

	Channel 1	Channel 2
Vols/DIV.	DC 5 V/DIV.	AC 0.2 V/DIV. (DC 0.5 V/DIV. for white level adjustment)
Time	0.5 msec/DIV.	

5. Connect channel 1 and 2 probes and the grounding terminals of the oscilloscope to the test pins (TP's) on the A/D conversion PCB, as shown in Table 1.

NOTE: Be sure that the light path between the exposure lamp and lens is not obstructed by the probes or their lead wires.

6. Select the time range and volts/division for each channel of the oscilloscope as shown in Table 2. Then turn on the main switch of the oscilloscope.

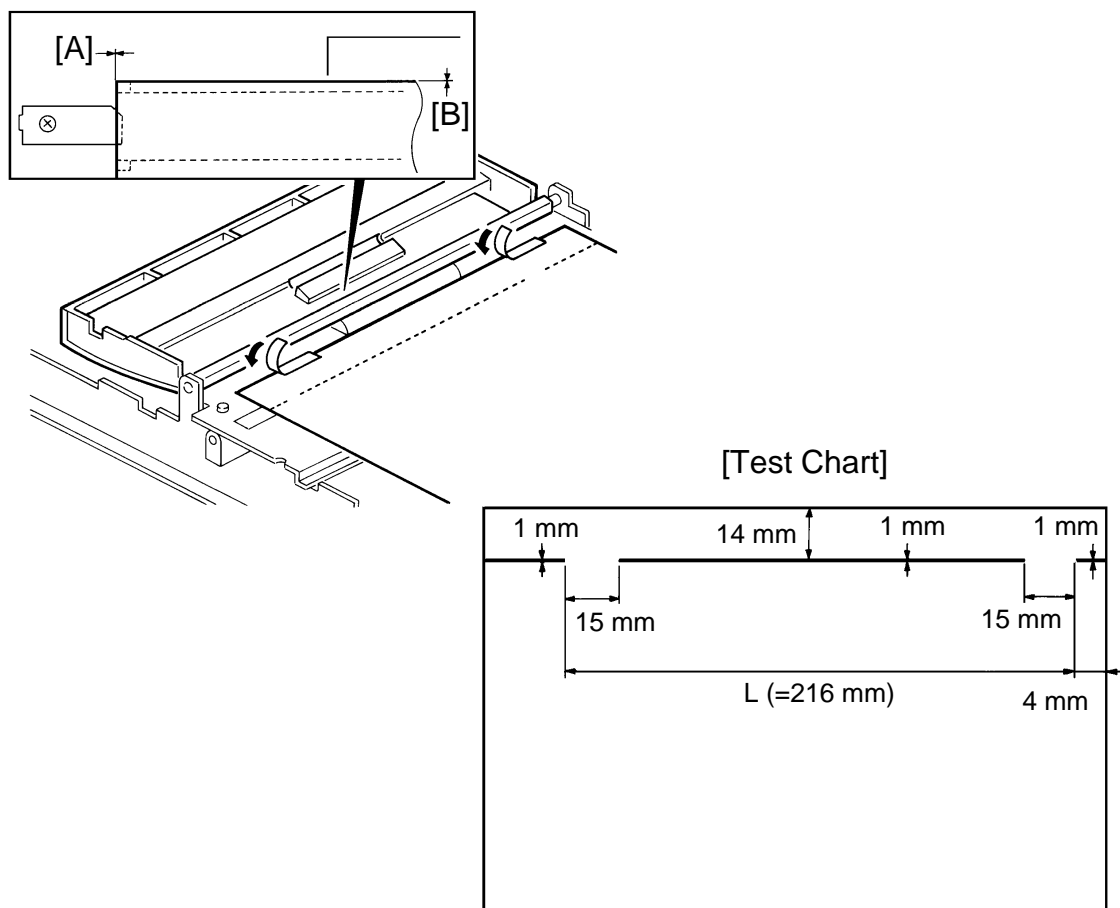
NOTE: Select DC 0.5 V/DIV. for channel 2 when the white level adjustment is carried out.

7. Connect the power plug, and turn on the main switch to access the output mode. (Turn on the main switch while holding down the Print Start, Stop, and Clear keys together. Then, press the Memory/Class key once to get "00" in the memory display.)

8. Select the exposure lamp on mode. (Enter "9" with the number key.)

NOTE1: If the positions of the CCD PCB, lens, and/or lens housing are different from the original positions (if some are replaced) fix each part temporarily as follows, to make the adjustment easier:

- 1) Position the CCD PCB fully on the operation side.
- 2) Fully insert the lens into the lens housing. Also, be sure that the white mark on the lens faces to the top.
- 3) Move the lens housing fully to the exposure lamp side.



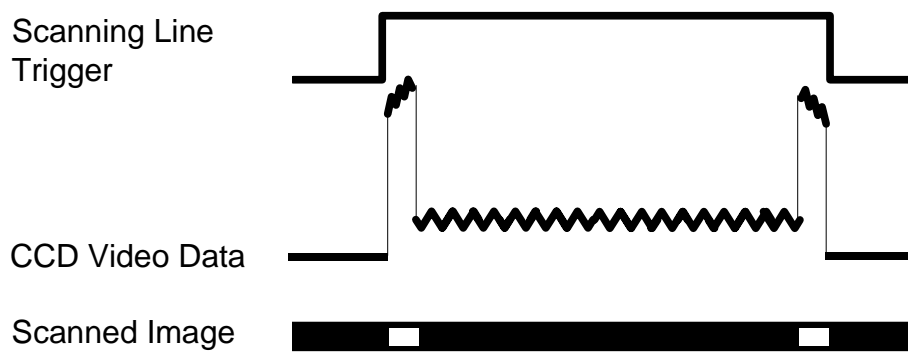
"L" in the illustration must be 216 mm exactly. Otherwise, the magnification ratio cannot be adjusted correctly.

Replacement
and
Adjustment

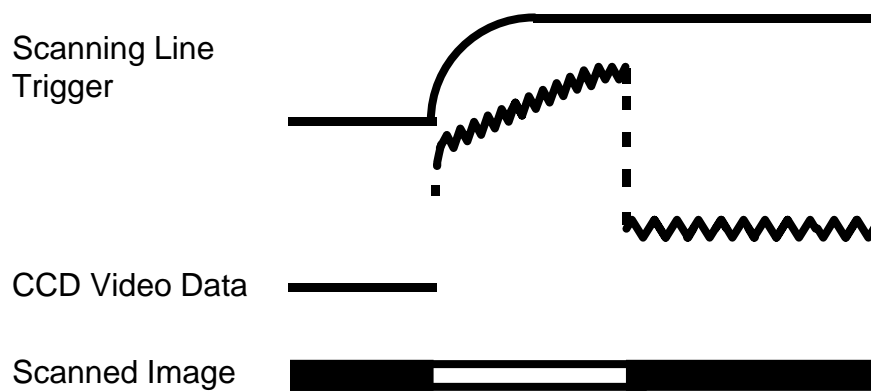
NOTE2: If facsimile test chart R-21 is not available, you can make a test chart, as shown, to do the scanning line position, scanning start position, and magnification ratio adjustments. (See the following pages for each adjustment.) Place the test chart with the image side down and fix it with tape as shown. Place the leading edge of the test chart even with the edge of the cutout for the original feed roller [B]. Also, the right side edge should be even with the edge of the cutout for the exposure glass [A].

If you use the test chart, the waveform for each adjustment that can be seen in the screen of an oscilloscope will be represented as follows:

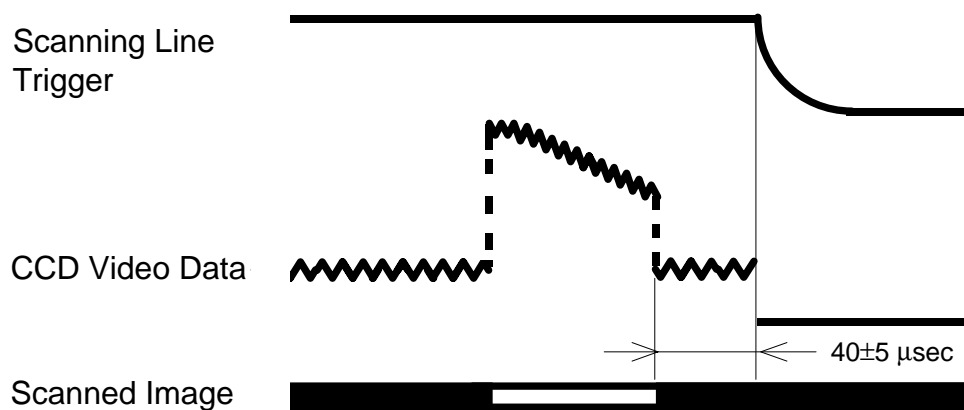
(1) Scanning Line Position Adjustment



(2) Scanning Line Start Position Adjustment

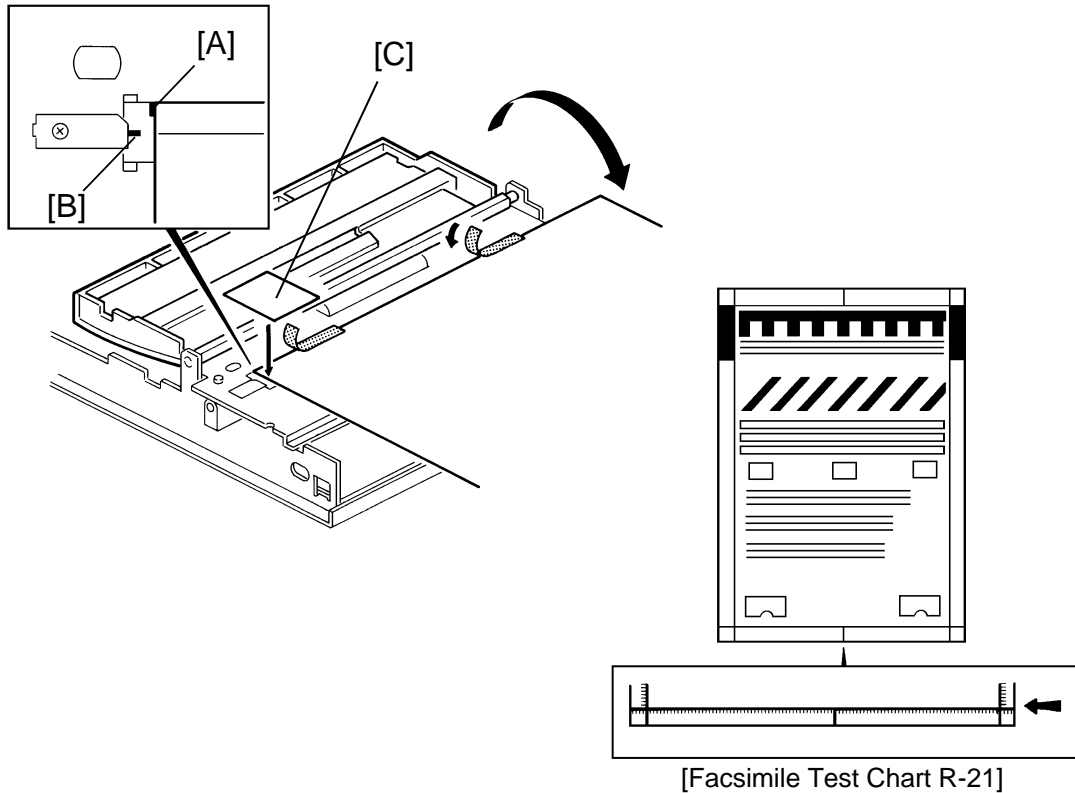


(3) Magnification Ratio Adjustment



9.1.2 Scanning Start And Line Position Adjustment

PURPOSE: To ensure that the CCD alignment is perpendicular to the original feed direction (scanning line position). Also, to ensure that the CCD scanning starts from the correct position on the exposure glass (scanning start position). The first element of the 2592 effective CCD elements should read the end of 216 mm length of a line, which is the maximum length for the CCD main scanning line.

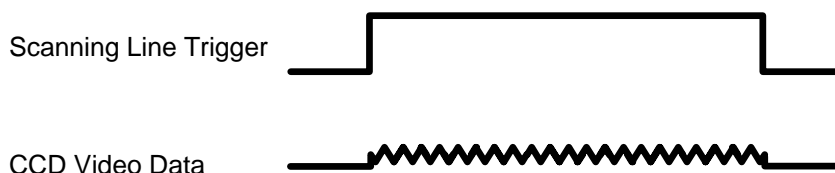
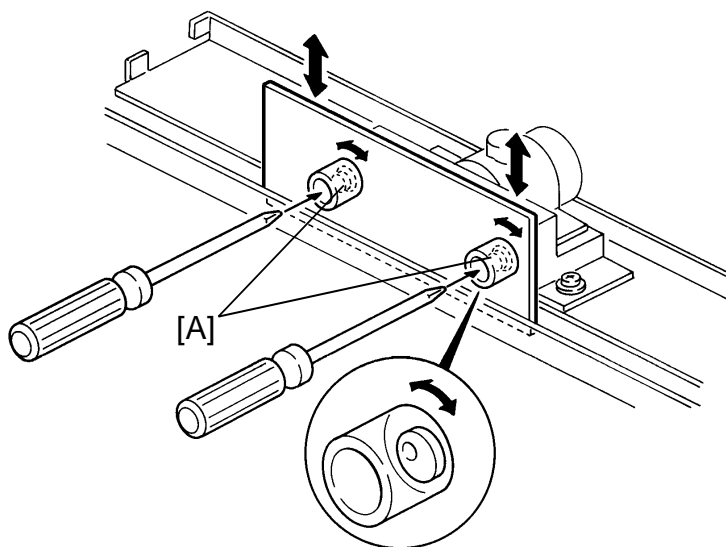


1. According to the two marks on the operation side of the exposure glass, and place facsimile test chart R-21 so that the line on the test chart (see illustration) is correctly positioned on the exposure glass.

NOTE: The right edge of the test chart meets mark [A], and the line on the test chart meets mark [B].

2. Fix the test chart with tape as shown. Then close the ADF.
3. Place a white sheet [C] beside the test chart.
4. Close the ADF.
5. Access the exposure lamp on mode and press the Print Start key to turn on the exposure lamp.

Replacement
and
Adjustment

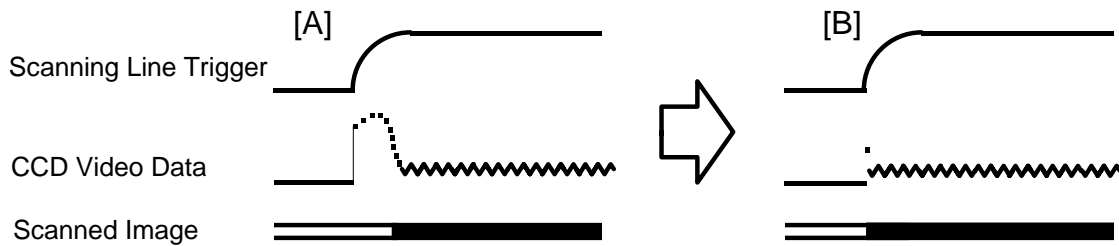
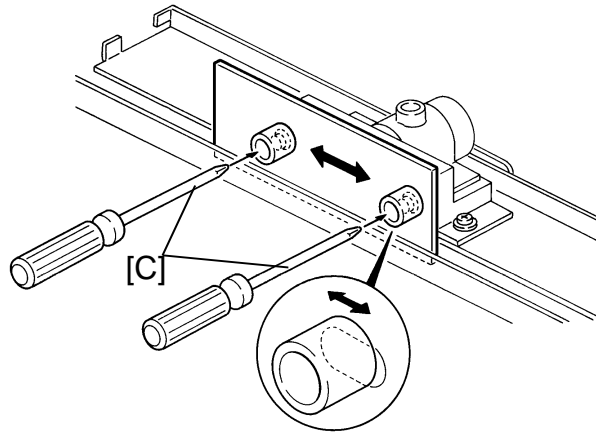


6. Look at the waveform on the oscilloscope. If the CCD scans the black line on the test chart correctly, the waveform will look like the one shown in the illustration above.

7. If the waveform is different, slightly loosen the screws inside the adjusting knobs [A] and turn the adjusting knobs to make the waveform as shown. (Scanning line position adjustment)

NOTE: 1) The bottom of the adjusting knobs is an eccentric cam. By turning the adjusting knobs, the CCD PCB moves up or down.

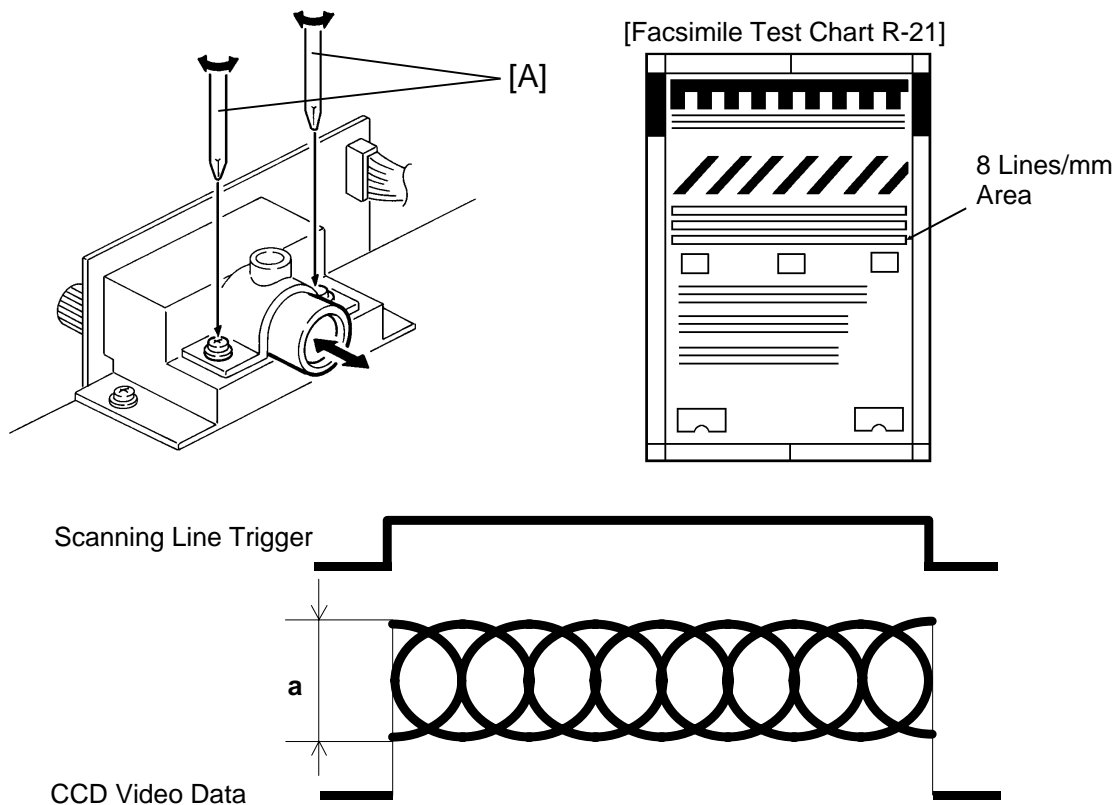
2) If the CCD scanning line is completely out of the correct position, a similar waveform will be seen. If the waveform does not change when white paper is placed on the exposure glass instead of the test chart, repeat step 7.



8. Select 10 times enlargement mode of the oscilloscope to see the waveform in better detail.
9. Look at the waveform on the oscilloscope. If the first CCD effective elements scan a white area, but not the black line on the test chart, the waveform for the first part of the CCD main scanning line will be as shown [A].
10. If the waveform is not as shown [A], move slightly the CCD PCB to the non-operation side until the CCD scans the white area. (The screws inside the adjusting knobs must be loosened to move the CCD PCB.)
11. While monitoring the oscilloscope, gradually move the CCD PCB to the operation side until the first CCD effective element reads the end of the black line on the test chart. (A few elements leeway is allowed)
NOTE: If step 11 is completed, the waveform will be as shown [B]. The illustration [B] means that the end of the black line is read by one element before the first CCD effective element.
12. Securely tighten the screws [C] inside the adjusting knobs.
NOTE: The CCD position may be changed when the screws are tightened. Repeat steps 6 and 7 to check the CCD position.

9.1.3 Focus (Modulation Transfer Function) Adjustment

PURPOSE: To adjust the focus distance between the CCD and the lens.

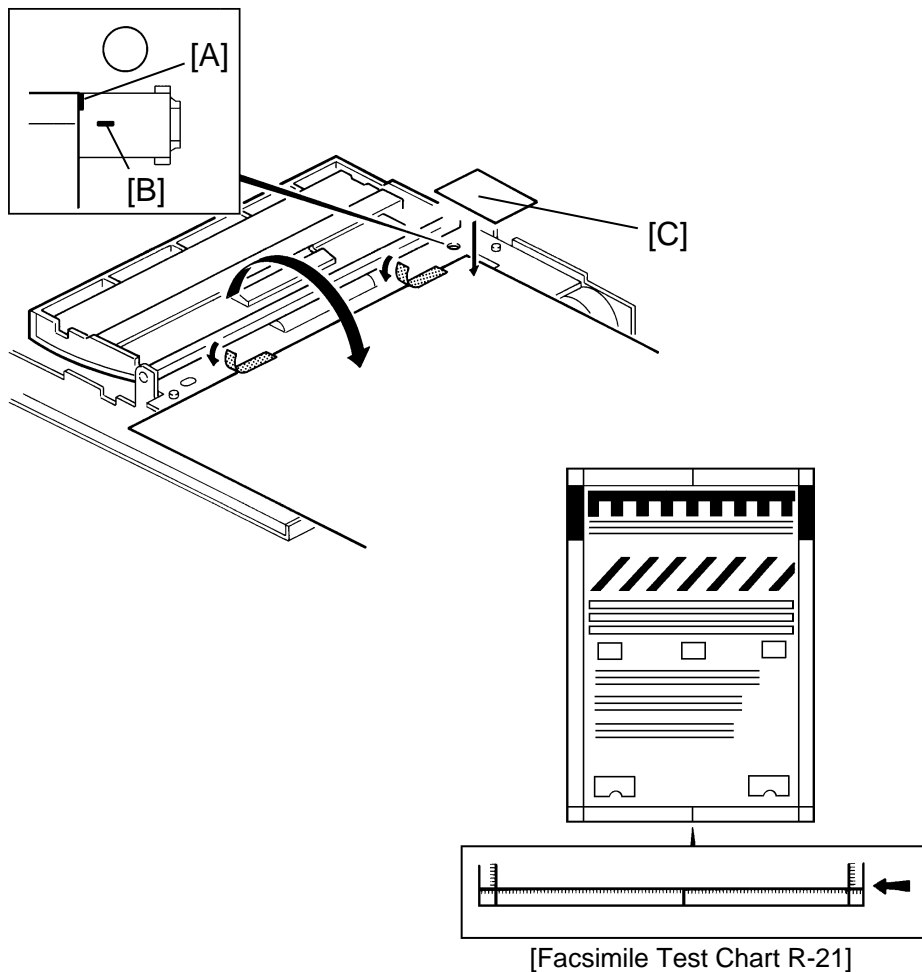


1. Place facsimile test chart R-21 on the exposure glass so that the 8 lines/mm area is scanned by the CCD.
2. Access the exposure lamp on mode and press the Print Start key to turn on the exposure lamp.
3. Check if the waveform looks like the one shown in the illustration above.
NOTE: Be sure that the light path between the exposure lamp and lens is not obstructed by the ADF cover.
4. Loosen the two screws [A] and then move the lens as shown.
5. Secure the lens when "a" of the waveform reaches its maximum.

CAUTION: Be sure that the white mark on the lens always faces towards the top.

9.1.4 Magnification Ratio Adjustment

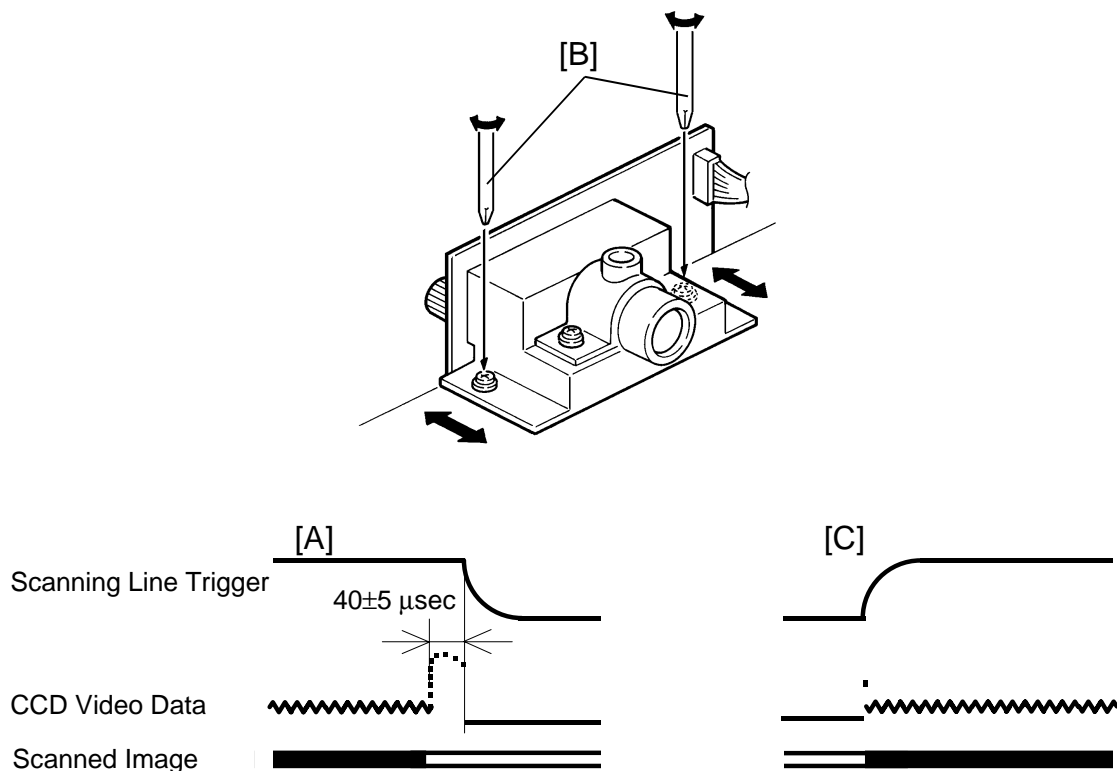
PURPOSE: To adjust the distance between the lens and original on the exposure glass to reproduce the images at full size (100%) magnification ratio.



1. According to the two marks on the non-operation side of the exposure glass, place facsimile test chart R-21 so that the line on the test chart (see illustration) is correctly positioned on the exposure glass.

NOTE: The left edge of the test chart meets mark [A], and the line on the test chart meets mark [B].

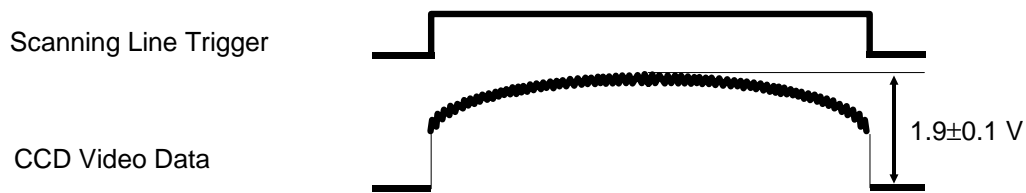
2. Fix the test chart with tape as shown. Then close the ADF.
3. Place a white sheet [C] beside the test chart.
4. Access the exposure lamp on mode and press the Print Start key to turn on the exposure lamp.



5. Check if the CCD reads the black line on the test chart correctly. If not, follow **"9.1.2 Scanning Start And Line Position Adjustment."**
NOTE: If **"9.1.2 Scanning Start And Line Position Adjustment"** is completed and the CCD does not scan the black line properly, reposition the test chart.
6. Select 10 times enlargement mode of the oscilloscope to see the waveform in better detail.
7. Look at the waveform on the oscilloscope. If the last CCD effective elements scan a white sheet, but not the black line on the test chart, the waveform for the last part of the CCD main scanning line will be as shown [A].
8. Loosen the two screws [B] and then move the lens housing as shown.
9. Secure the lens housing when "a" of the waveform becomes $40 \pm 5 \mu\text{sec}$.
10. Be sure that the waveform for the first part of the CCD main scanning line is as shown [C].
11. If not, follow steps 10 to 12 of **"9.1.2 Scanning Start And Line Position Adjustment."** Then repeat steps 8 to 10 above.

9.1.5 White Level Adjustment














PURPOSE: To be sure that the CCD video data is properly amplified through the A/D conversion PCB.







1. Connect channel 2 probe to TP202, channel 1 Probe to TP204, and their grounding terminals to TP203. (see pg. 5-45)
2. Select DC 0.5 volts/Division for channel 2 and DC 5 volts/ Division for channel 1.
3. Close the ADF.
4. Access the exposure lamp on mode and press the Print Start key to turn on the exposure lamp.
5. Turn VR201 on the A/D conversion PCB so that the maximum level of the waveform is 1.9 ± 0.1 volts as shown.

TROUBLESHOOTING

1. ELECTRICAL COMPONENT TROUBLE

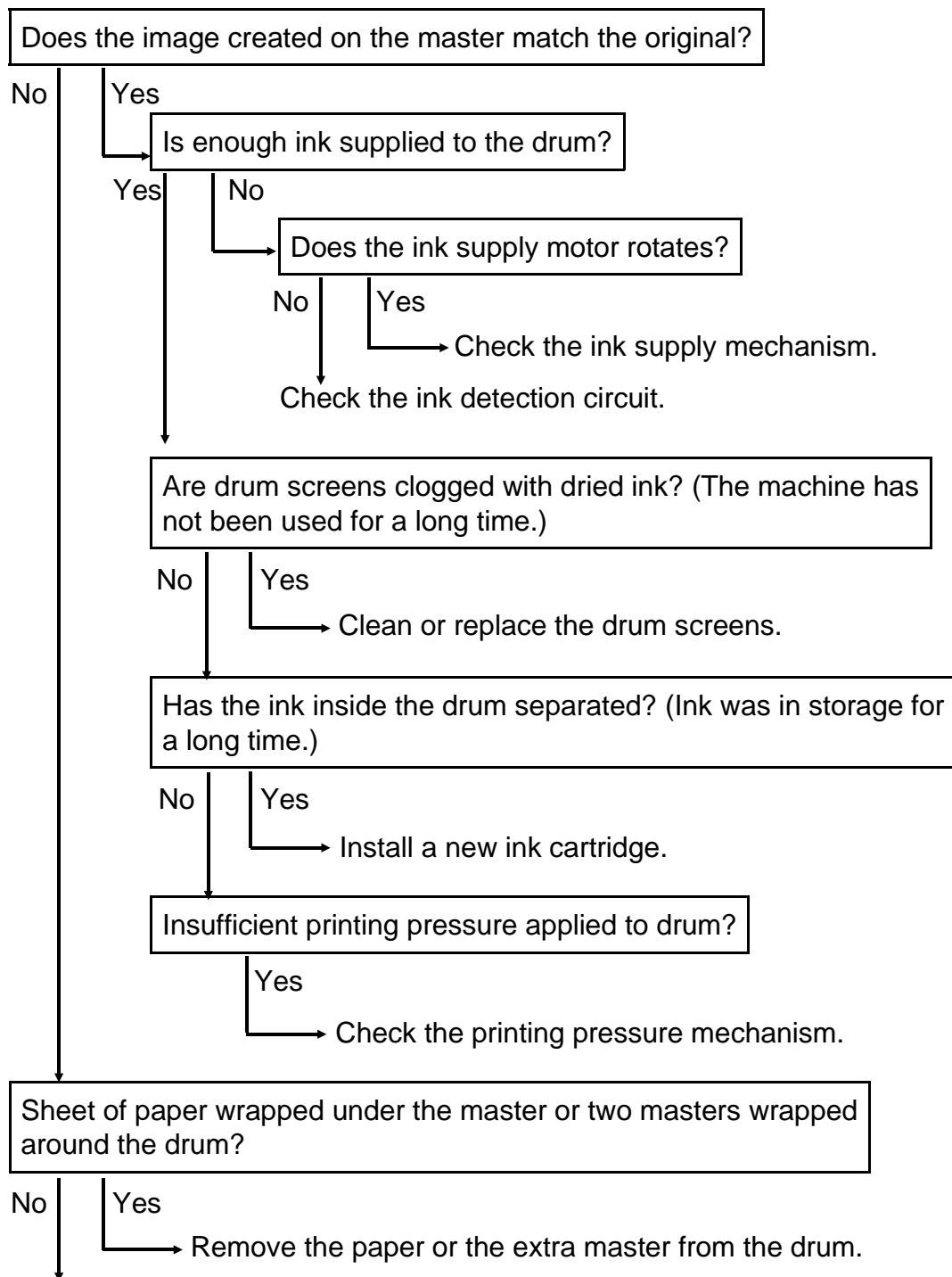
Component	Condition	Phenomenon
FU101 (Main PCB)	Open	When the master making key is pressed, "E-00" is displayed.
FU102 (Main PCB)	Open	The air knife motor does not work.
FU401 (Noise Filter PCB)	Open	Machine does not work. (No indicators on the operation panel turn on.)
Master End Sensor	ON condition (Activated)	Even though no master is present, the machine starts master feed operation, then "C" and  light.
	OFF condition (Not activated)	Even if a master is present,  lights.
Original Registration Sensor	ON condition (Photo-transistor is not activated)	When the main switch is turned on, "A" and  light.
	OFF condition (Photo-transistor is not activated)	After the master making key is pressed, "A" and  light.
Feed Jam Timing Sensor	ON condition (Interrupted)	The last paper is not fed and "E" and  light.
	OFF condition (Not interrupted)	After the print start key is pressed, the drum keeps rotating without paper feed.
Paper End Sensor	ON condition (Activated)	If there is no paper on the paper table, the print start key can be activated but "B" and  light.
	OFF condition (Not activated)	If there is paper on the paper table,  lights.
Registration Sensor	ON condition (Activated)	When the main switch is turned on, "B" and  light.
	OFF condition (Not activated)	After the print start key is pressed, "B" and  light.
Feed Start Timing Sensor	ON condition (Interrupted)	After the main motor starts rotating, "E-06" is displayed.
	OFF condition (Not interrupted)	After the main motor starts rotating, "E-06" is displayed.
Exit Jam Timing Sensor	ON condition (Interrupted)	After the 1st print is delivered, "E" and  light.
	OFF condition (Not interrupted)	There is no print count down. (The machine does not stop printing until the last paper is fed.)
Master Eject Position Sensor	ON condition (Interrupted)	The drum rotation speed is kept at 30 rpm while printing.
	OFF condition (Not interrupted)	The drum keeps rotating at 30 rpm after the print start key or the master making key is pressed.
Drum Master Sensor	ON condition (Activated)	Prints can be made without having a master around the drum.
	OFF condition (Not activated)	After the master feed operation is finished, "C" and  light.
Exit Sensor	ON condition (Activated)	When the print start key or the master making key is pressed, "G" and  light.
	OFF condition (Not activated)	After the first paper is delivered, "E" and  light.

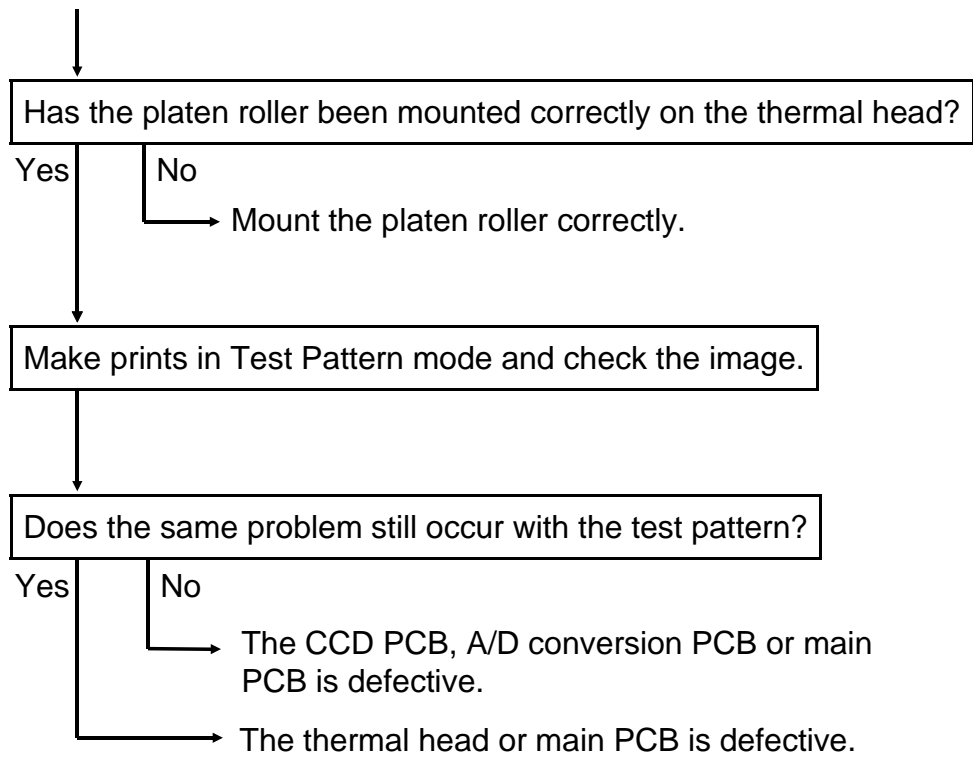
Component	Condition	Phenomenon
Master Eject Sensor	ON condition (Activated)	When the main switch is turned on, "F" and  light.
	OFF condition (Not activated)	After the master making key is pressed, "F" and  light.
Full Master Sensor	ON condition (Interrupted)	After the drum master is ejected, it is not compressed. (A master eject jam occurs.)
	OFF condition (Not interrupted)	After the drum master is ejected,  lights.
Pressure Plate H.P. Sensor	ON condition (Interrupted)	The pressure plate does not return to the home position. (A master eject jam occurs at the next master eject operation.)
	OFF condition (Not interrupted)	When the main switch is turned on, E-12 is displayed. The pressure plate drive gears are damaged.
Original Set Sensor	ON condition (Activated)	After the printing operation of the last original is finished, "A" and  light.
	OFF condition (Not activated)	When the master making key is pressed, "A" blinks.
Left Cutter Switch Right Cutter Switch	ON condition (Activated)	The master is not cut. (A master feed jam occurs.)
	OFF condition (Not activated)	When the main switch is turned on, or after the master is cut, "E-01" is displayed.
Master Clamper Switch	ON condition (Activated)	Master clamper is not opened or closed. (A master feed/eject jam occurs.)
	OFF condition (Not activated)	When the main switch is turned on, or the master clamper is opened, "E-00" is displayed.

2. TROUBLESHOOTING

2.1 IMAGE TROUBLE

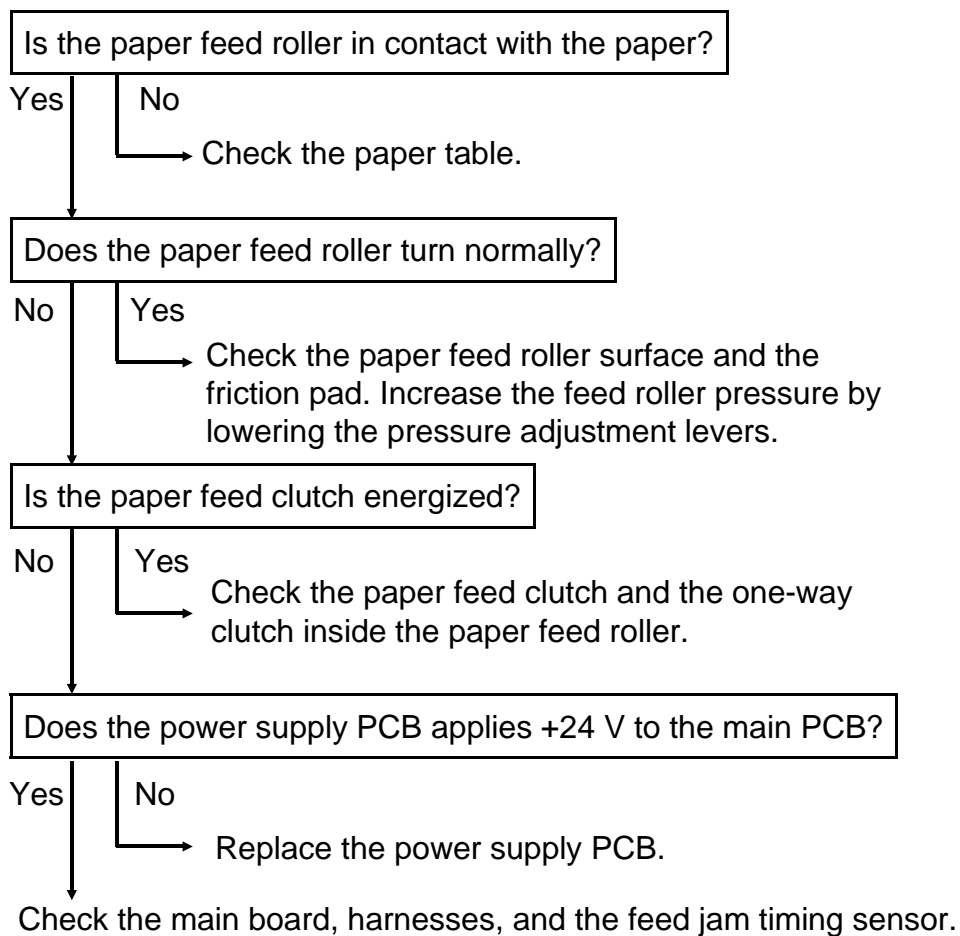
1. No image, white lines, uneven image on copy



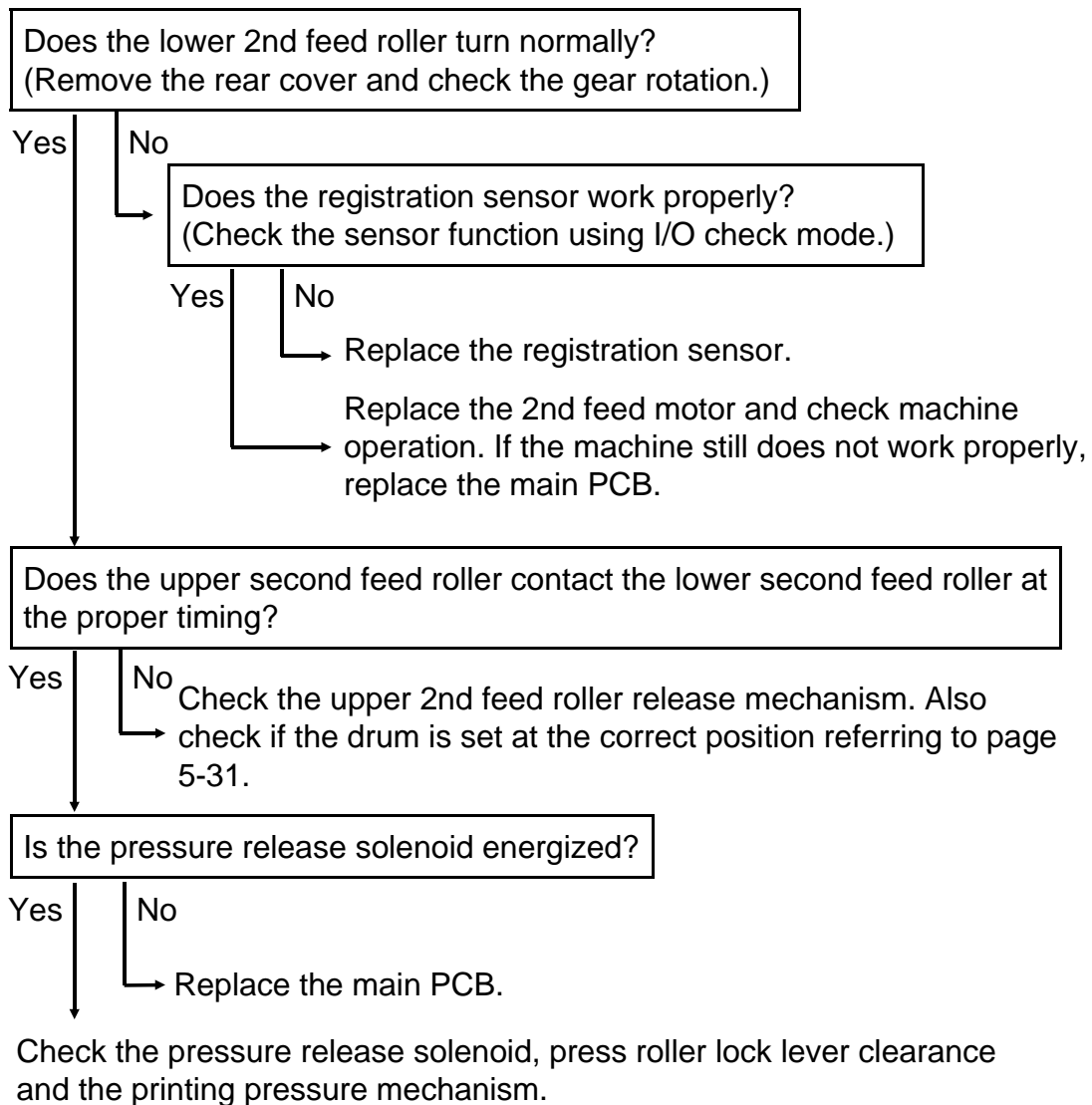


2.2 PAPER FEED TROUBLE

1. No paper is fed from the paper table.



2. Paper jams under the second feed roller.



PCRIP-10

Priport Controller

Installation Guide

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7.1 INTRODUCTION

The Priport Controller is an external PostScript® and PCL-5® compatible processor designed to add a computer interface to Priport Digital Duplicators. Since it is separate from the Priport, the designers were able to use high-speed techniques making it one of the fastest add-on processors available.

The Controller uses a high-speed 25 megahertz Intel 960-CF RISC microprocessor chip to achieve its high speed processing. In addition the Controller contains 4 Megabytes (Mb) of RAM which can be upgraded to 16 Mb.

This product features Pipeline Associates' PowerPage™ interpreter, a widely recognized LaserWriter® compatible implementation of Adobe's® PostScript interpreter. The PowerPage interpreter offers users excellent quality and performance in handling the thirty-five industry standard Type 1 compatible fonts built into the Controller. Pipeline Associates' PCL-5 compatible interpreter is also built into the Controller providing the eight standard Intellifont™ PCL-5 fonts.

The Controller supports several models of Priport Digital Duplicators with print resolutions of 300 dots per inch (dpi). The U.S. page sizes supported by the Priport Controller are US Letter, US Legal and US 11 x 17. Supported international page sizes are A3, A4, B4 and B5.

We reserve the right to make amendments to the technical specifications and/or the external appearance of the equipment without prior notice.

7.2 SYSTEM REQUIREMENTS

Supported Priports:

- Models VT1730 and VT2105

Compatible computers:

- IBM 286, 386, 486 and compatible PC's
- Apple Macintosh

Memory requirements:

- The Priport Controller places no requirements on the RAM in the PC or Macintosh.

7.3 INSTALLATION PROCEDURE:

CAUTION: DO NOT use the documentation that is packed in the Kit, the instructions are incorrect. Discard the complete set of material titled "INTERFACE UNIT -10 TYPE 1". Use the installation procedure listed below.

1. Insure that the Priport is turned off and disconnected from the power source.
2. Prior to installation, set the dip switches DPS101 on the new Video Interface Board to the correct setting for the Model VT1730 Priport.

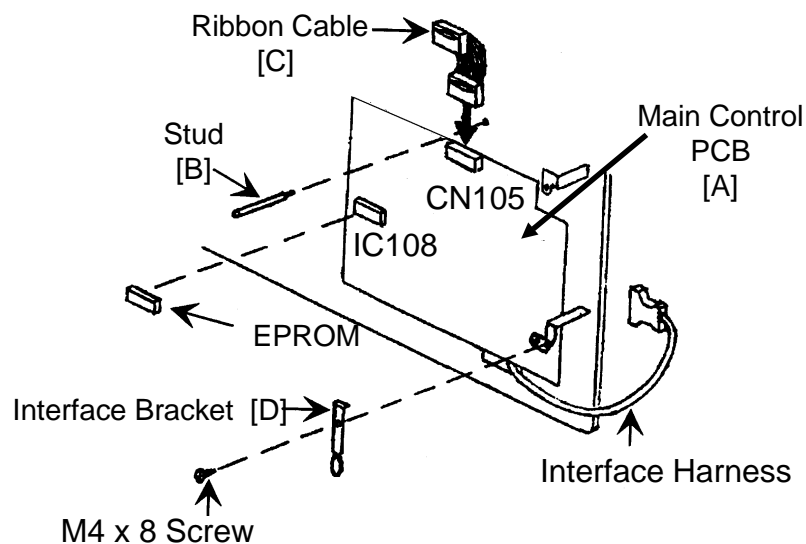
Number 1: On (up)

Number 2, 3, 4: OFF (down)

3. Remove the front cover of the Priport.

CAUTION: Take appropriate precautions to prevent a static discharge during the next two steps.

4. Note the placement of pin 1 of the EPROM, IC108 before removing from the Main Control Board [A] of the Priport. Refer to figure 1.



**FIGURE 1:
FRONT VIEW OF FRAME WITH MOUNTING HARDWARE**

5. Install the new EPROM into IC108.
6. Install the long stud [B] into the chassis, directly above capacitor, C225 on the Main Control Board. (Will be used to support the upper right corner of the Video Interface Board)
7. Attach one end of the short I/O Ribbon Cable [C] to the connector, CN105 on the Main Control Board.
8. Remove and discard the mounting screw (not shown) from lower right corner of the Main Control Board. Refer to figure 2.

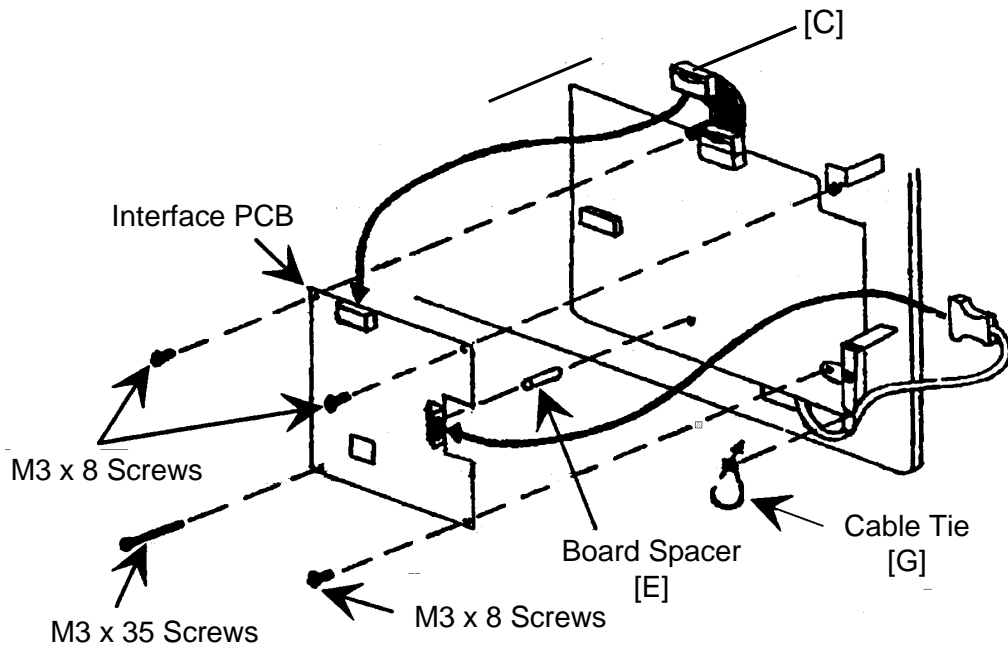


FIGURE 2:
FRONT VIEW OF FRAME WITH INTERFACE PCB

9. Mount the Interface Bracket [D] to the cleared mounting position, use a M4x8 screw and flat washer (Note: Flat washers not illustrated).
10. Attach the upper and lower right corners of the Video Interface Board, use two M4x8 screws and flat washers.
11. Thread the M3x8 screw, with flat washer, through the mounting hole in the lower left corner of the Video Interface PCB, the Board Spacer [E], through the Main Control Board and into the chassis.
12. Attach the upper left corner of the Video Interface PCB to the Long Stud [B], use a M3x6 screw with flat washer.
13. Attach the short I/O Ribbon Cable to the Video Interface PCB, CN102.
14. Remove the rear cover from the machine.
15. Working from the rear of the machine, thread the small connector end of the Interface Harness with Bracket [F] through the cable channel to the front of the machine. Refer to figure 3.

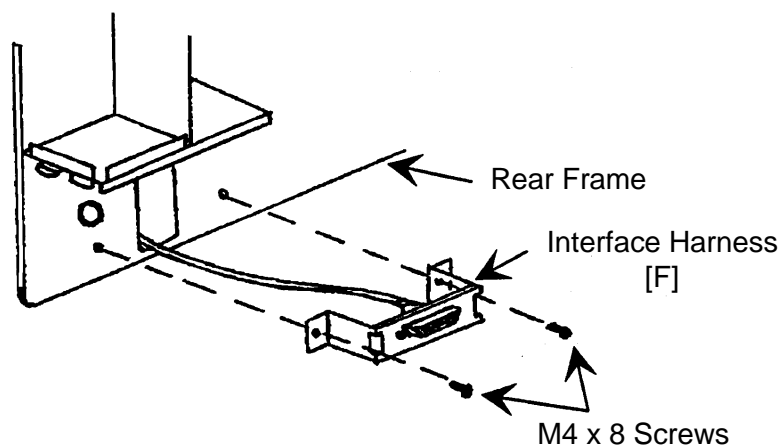


FIGURE 3:
REAR VIEW OF FRAME

16. Attach the small connector of the Interface Harness to the Video Interface PCB, CN101.
17. Attach the U-shaped bracket of the Interface Harness across the cable channel of the chassis, use two M4x8 screws with flat washers. Refer to figure 3.

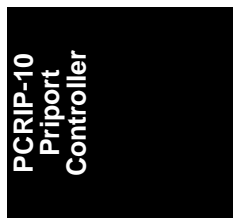
18. Snap out the communication port cover plate from the lower center of therear cover.
19. Using the cable tie [G], fasten the Interface Harness to the Interface Bracket [D] (at the indentation of the bracket). Refer to figures 1 and 2.
20. Re-assemble the machine.
21. The last installation step is to attach the Ferritecore (not illustrated) onto the interconnect cable that is used to connect the Controller Box to the Priport machine. "Snap" the Ferritecore around the cable nearest the MALE end of the cable (connects to the Priport)
22. Refer to the PCRIP - 10 Priport Controller "Installation Guide" for the proper cabling configuration.
23. Refer to the PCRIP - 10 Priport Controller "User's Guide" for the proper set-up and operation procedures.

7.4 PARTS LISTING:

INTERFACE UNIT-10 TYPE 2 KIT

QUANTITY	DESCRIPTION
1	EPROM for Main Control PCB (IC108)
1	Interface Harness with Mounting Bracket
1	Video Interface PCB
3	Phillips Screw M4x8 with flat washer
3	Phillips Screw M3x8 with flat washer
1	Interface Bracket
1	Long Stud
1	Board Spacer
1	Cable tie
1	Ferritecore
1	Diagnostic Plug

* Optional Test Tool, Refer to Section 7.6, Step 8.



7.5 CABLING BETWEEN PCRIP-10 AND COMPUTER

The cable to be installed now is one that the customer has purchased to match his specific computer and communication port choice. The correct cable for each computer and communication port is described generally below. (For more detailed technical information on cables, see page 7-12).

A. IBM and compatibles - Parallel

1. Make sure that the customer's computer is turned off.
2. Attach the DB-25 Male end of a standard PC parallel printer cable to the customer designated parallel output port on the rear of the computer. Record the choice of LPT1 or LPT2 because this port name will be required during the configuration process.
3. Attach the other end (36-pin Centronics Male) of a standard PC parallel printer cable to the input port on the rear of the PCRIP-10 labeled "Parallel In".

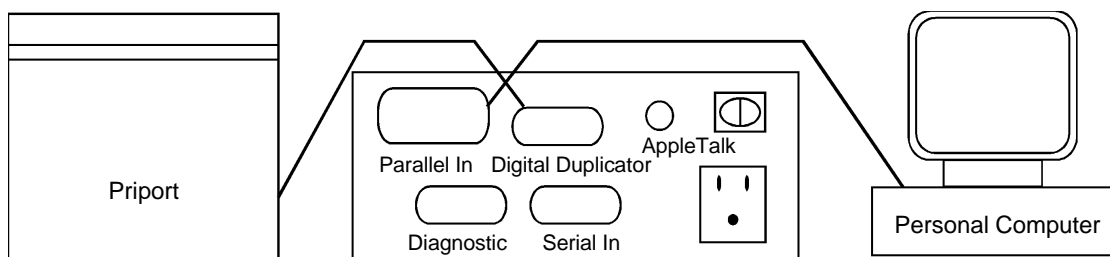


Figure A - Parallel Connection

B. IBM and compatibles - Serial

1. Make sure that the customer's computer is turned off.
2. Attach the DB-25 Female end of a standard PC serial printer cable to the customer designated serial output port on the rear of the computer. Record the choice of COM1 or COM2 because this port name will be required during the configuration process.
3. Attach the other end (DB-25 Male) of a standard PC serial printer cable to the input port on the rear of the PCRIP-10 labeled "Serial In".

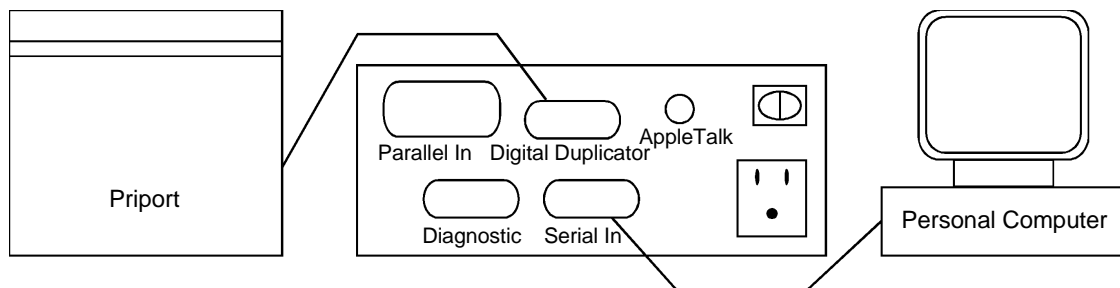


Figure B - Serial Connection

C. Macintosh computers - AppleTalk Standard

1. Make sure that the customer's computer is turned off.
2. Attach one 8-pin mini din Male end of a standard Macintosh printer cable to the printer output port on the rear of the computer.
3. Attach the other end (8-pin mini din Male) of a standard Macintosh printer cable to the input port on the rear of the PCRIP-10 labeled "AppleTalk".

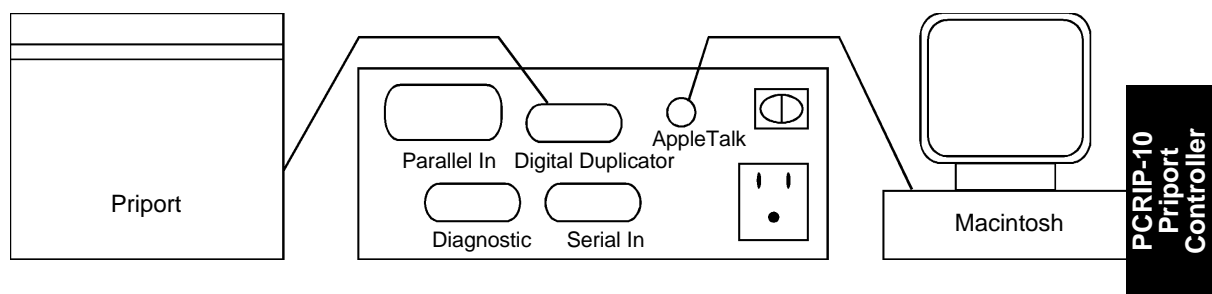


Figure C - AppleTalk Connection

7.6 SYSTEM VERIFICATION AND DEFAULT CONFIGURATION

Now that the physical installation is complete, you are ready to start the system verification.

1. Plug in all components of the system and turn them on in this order:
 1. Computer
 2. Priport
 3. PCRIP-10
2. Look at the two lights located in the lower left corner below the product label. The left hand light indicates "Power-on". It will stay on as long as the PCRIP-10 is receiving power.
3. The right hand light indicates "Ready". It will come on for a few seconds at Power-on and then go off for up to 60 seconds while the PCRIP-10 runs its internal diagnostics. If the Ready light comes back on and stays on, the PCRIP-10 has passed its startup diagnostics and verified communication with the Priport.
4. If the Ready light flashes quickly, the PCRIP-10 has not been able to verify communication with the Priport.
 - A. First, check to see if the Priport is plugged in and turned on.
 - B. Next, check to see that the cable from the PCRIP-10 to the Priport is securely seated in the ports at each end.
 - C. If the Ready light does not come on after these steps, turn off the PCRIP-10 and then the Priport.
 - Check to see that the small "AMP" connector of the Interface Harness is securely fastened to the connector on the Video Interface PCB.
 - Check to see that the I/O Ribbon Cable which connects the Video Interface PCB to the image processing board inside the Priport is securely fastened as well. Then, turn on the Priport and the PCRIP-10. Watch the Ready light again to see if it comes on briefly, goes off for approximately 30-60 seconds and then comes back on. If so, you are ready to proceed. If not, contact your local service organization for help.
5. If the Ready light fails to come on at all, the PCRIP-10 has been damaged, contact your local service organization for help.
6. Push the On Line button on the Priport Control Panel. The Priport must be On Line for the Priport to accept input from the computer through the PCRIP-10. (If the Priport is not On Line, the scanner in the Priport will be enabled instead.) If the green On Line light comes on, skip to Step 8.

7. If the On Line light does not come on, check to see that the new ROM was installed as described in Step 5 of the Installation Procedure and is seated firmly in its socket. Try the On Line key again. If the On Line light comes on, skip to Step 8. If not, contact your local service organization for help.
8. Turn the PCRIP-10 off. Install the Diagnostic Plug P/N DP000001 (optional test tool) in the port labeled Diagnostic on the rear of the PCRIP-10 and turn it back on again. The PCRIP-10 will send an internal PostScript file to the Priport which will output a Diagnostic Status page. This page includes PostScript font samples as well as configuration status from the PCRIP-10. (An example of this page can be found on page 7-37 of the Priport Controller User's Guide.)
9. The configuration status information found in the lower left corner of the page should match the following factory default settings:

Selected Page Size: US Letter (in US and Canada) or A4
(International) Controller RAM size: 4 Megabytes Mode: Postscript
Compatibility

(The number which follows "Controller Firmware Rev:" will vary according to when the PCRIP-10 was manufactured. This firmware revision number will be needed only if you must contact your local service organization about technical problems with this PCRIP-10 unit.)

Now that you have verified that the PCRIP-10 can successfully send files to the Priport, you are ready to proceed with configuring the PCRIP-10. Turn to page 7-23 of the User's Guide to continue.

7.7 CABLE PIN-OUT DIAGRAMS

A. PARALLEL INTERFACE CABLE (CENTRONICS) PIN-OUT CONNECTIONS:

<u>DB-25 Pin Male</u>	<u>Centronics</u>
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
15	32
18 - 25	19 - 30

B. PARALLEL INTERFACE CABLE (CENTRONICS) PIN ASSIGNMENTS:

<u>Signal</u>	<u>Pin</u>	<u>Signal</u>	<u>Pin</u>
-Strobe (Input).....	1	GND	19
Data 1 (Input).....	2	GND	20
Data 2 (Input).....	3	GND	21
Data 3 (Input).....	4	GND	22
Data 4 (Input).....	5	GND	23
Data 5 (Input).....	6	GND	24
Data 6 (Input).....	7	GND	25
Data 7 (Input).....	8	GND	26
Data 8 (Input).....	9	GND	27
-Acknlg (Output).....	10	GND	28
Busy (Output).....	11	GND	29
Paper Error (Output)	12	GND	30
Select (Output).....	13	NC	31
NC.....	14	-Error.....	32
NC.....	15	+5 VDC (Output)	33
0 VDC	16	NC	34
GND.....	17	+5 VDC (Output)	35
+5 VDC (Output)	18	NC	36

The dash (-) before some signals indicates that the signal is negative true (active LOW). GND means the connection is a ground. NC indicates that the pin has no connection.

C. SERIAL INTERFACE CABLE PIN-OUT CONNECTIONS:

Controller	PC
<u>DB-25 Pin Male</u>	<u>DB-25 Pin Female</u>
1	1
2	3
3	2
5, 6	20
7	5
8	7
20	5, 6

ControllerPC

<u>DB-25 Pin Male</u>	<u>DB-9 Pin Female</u>
2	2
3	3
4	1
5, 6	4
7	5
8	7
20	6, 8

NOTE: The cable pin-outs shown above are recommended; however, any standard serial printer cable should work.

D. SERIAL INTERFACE CABLE PIN ASSIGNMENTS FOR CONTROLLER:

<u>Signal</u>	<u>Pin</u>
Protective ground shield	1
Transmitted data from the Controller (Output)	2
Received data by the Controller (Input)	3
Request to send (Output)	4
Clear to send (Input)	5
Data set ready (Input)	6
Signal ground	7
(Not Used)	8
Data terminal ready (Output)	20

PCRIP-10
Printer
Controller

7.8 RAM UPGRADE PROCEDURE

The RAM in the PCRIP-10 consists of four (4) - 1 Megabyte by 8 (or 9) Single-Inline-Memory-Modules (SIMMs) running at 70 nanoseconds. A SIMM consists of a very small (appr. 3/4" inch by 3 1/2" inches) printed circuit board (PCB) with 30 contact fingers which plug into sockets on the main board of the PCRIP-10. Dynamic RAM memory chips which are soldered on to this small PCB can communicate with each other through the wiring in the board and with the main board through the 30 contact fingers. The actual physical number of DRAM chips installed on the SIMM can be either 2 or 8 for 1 Mb x 8 (3 or 9 for 1 Mb x 9) depending on the density of the chips. (See Figure 1.)

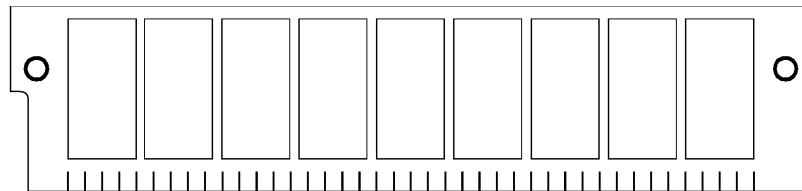


Figure 1 - SIMM

"1 Megabyte X 8" (or 9) describes a SIMM with 1 Megabyte usable storage which sends data out 8 bits (or 9 bits) at a time.

"70 nanoseconds" describes how fast the memory can respond in billionths of a second to commands from the Intel CF processor chip on the main board of the PCRIP-10.

HOW TO UPGRADE RAM TO 16 MEGABYTES

To upgrade the PCRIP-10 to 16 Megabytes of RAM from the factory standard, contact either a local computer dealer or an electronic component distributor about purchasing parts with the following description:

Four (4) - 4 Megabyte X 8 (or 9) SIMMs with 30 contact fingers running at 70 nanoseconds (ns) While SIMMs of this variety are available in both 70 and 80 ns speeds, **BE CERTAIN TO PURCHASE ONLY SIMMS WHICH RUN AT 70 NS!** Due to the high speed of the Intel CF processor chip, SIMMs running at 80 nanoseconds will not work in the PCRIP-10.

NOTE: Please take appropriate precautions for preventing static discharge throughout this procedure.

1. Turn off and disconnect all cables to the PCRIP-10.
2. Slide the metal chassis of the controller from its plastic housing.
3. Remove the 3 screws from each side and 2 screws from the backpanel which hold the chassis lid in place.
4. Remove the chassis lid and set it aside.

5. With the chassis oriented with the 2 LED's facing you, the 4 SIMMs to be replaced are located directly to your right. (See Figure 2.) Main PCB

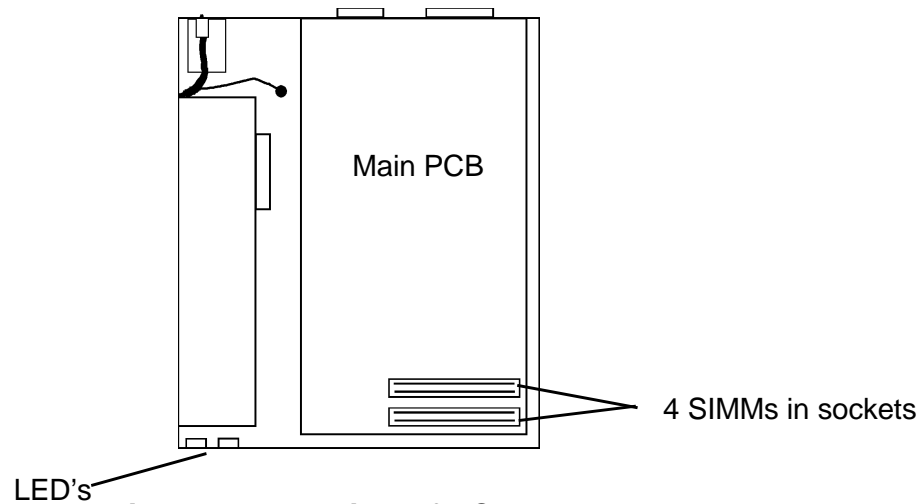


Figure 2 - Top View of PCRIP-10

NOTE: BE VERY CAREFUL NOT TO BREAK ANY PORTION OF THE SIMM SOCKET OR SOCKET CLIP WHEN REMOVING OR INSTALLING SIMMS. THIS IS AN ITEM WHICH CAN BE REPAIRED ONLY BY REPLACING THE MAIN BOARD AT THE FACTORY!

6. Starting with the SIMM in the socket closest to you, gently move the clip on one end of the socket to release the edge of the SIMM.
7. Gently move the clip on the other end of the socket to release the other edge. When both edges are released the SIMM will rotate forward (toward you) at a 45 degree angle.
8. Carefully remove the existing SIMM by pulling it towards you and set it aside.
9. Repeat Steps 6 through 8 for each of the remaining SIMMs, each time moving to the next socket away from yourself.
10. Starting with the SIMM socket farthest away from you, with the notched edge of the SIMM pc board on your right, insert one of the new 4 Megabyte X 8 (or 9) SIMMs in the socket at a 45 angle (toward you). The insertion angle for the new SIMMs is the same angle you used when removing the previous SIMMs.
11. Gently rotate the top of the SIMM away from you until you see the clips on each end of the socket engage. Check to see if the prongs of the clips are inserted in both of the small holes at each end of the SIMM. When correctly inserted, the SIMM should be firmly seated in the socket.
12. Repeat Steps 10 and 11 for each on the remaining SIMMs, each time moving to the next socket closer to you.

13. To verify that the SIMM installation was successful, reattach the chassis lid to the chassis and reconnect all cables including the power cable to the PCRIP-10.
14. Install the Diagnostic Plug in the Diagnostic Port on the backpanel of the PCRIP-10.
15. Power on the PCRIP-10. A Diagnostic Status Page should be output to the Priport which confirms the "Controller RAM size" as 16 Megabytes. If the Diagnostic Status Page is correct, you may skip to Step 18. If the Diagnostic Status Page does not reflect the upgrade to 16 Megabytes of RAM, go to Step 16. If the Diagnostic Status Page does not output at all and the PCRIP-10 Ready light is off, go to Step 17.
16. If the Diagnostic Status Page still shows only 4 Megabytes as the "Controller RAM size", you need to recheck that each of the 4 SIMMs you just installed match the specification of "4 Megabytes X 8" or "4 Megabytes X 9" as given above. The PCRIP-10 startup diagnostic routine has checked the RAM and only found 4 Megabytes. **BE SURE TO TURN OFF AND UNPLUG THE CONTROLLER BEFORE MAKING ANY FURTHER CHANGES TO THE SIMMS.** When the changes are completed, repeat Steps 13 through 15 to verify successful installation before continuing to Step 18 for reassembly.
17. If a Diagnostic Status Page was not output to the Priport at all, the PCRIP-10 startup diagnostics routine has checked the RAM in the PCRIP-10 and found an error that prevented any further operation. **BE SURE TO TURN OFF AND UNPLUG THE CONTROLLER BEFORE MAKING ANY FURTHER CHANGES TO THE SIMMS.** When the changes are completed, repeat Steps 13 through 15 to verify successful installation before continuing to Step 18.
 - First, check to see if all the SIMMs are properly seated in their sockets. There should be no movement from side to side and very little movement up and down if the SIMMs are properly seated.
 - Next, verify that the newly installed SIMMs are, in fact, 70 ns in speed. As mentioned in the purchase specification above, 80 ns SIMMs do not respond quickly enough to work with the Intel CF processor in the PCRIP-10 and can not be used!
 - Check that all the newly installed SIMMs are 4 Megabyte X 8 (or 9) and that you have not accidentally reinstalled one of the 1 Megabyte X 9 SIMMs you removed.

- If none of the steps above have solved the problem, it is possible, though highly unlikely, that one of the new SIMMs is defective. If the SIMMs were purchased from reputable dealer or distributor, these components should have been tested and should also be replaceable under warranty.
18. Make sure the PCRIP-10 is turned off and that the Diagnostic Plug and all cables are removed.
 19. Make sure that the chassis lid is reattached with 8 screws--3 on each side and 2 on the backpanel.
 20. Slide the metal chassis back into the plastic housing. Be careful to line up the two LED's on the front of the chassis with the holes cut in the front panel of the plastic housing for them.

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Priport Controller

User's Guide

**PCRIP-10
Priport
Controller**

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7.9 REGULATORY NOTICES

FCC REGULATIONS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device.

Changes or modifications not expressly approved by Elesys, Inc. could void the user's authority to operate the equipment.

7.10 TRADEMARKS

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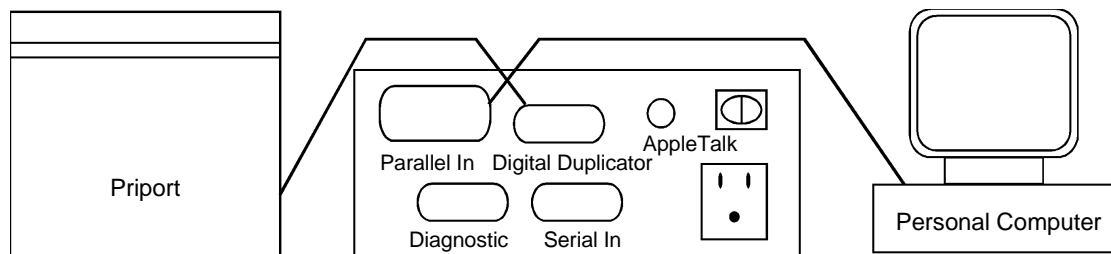
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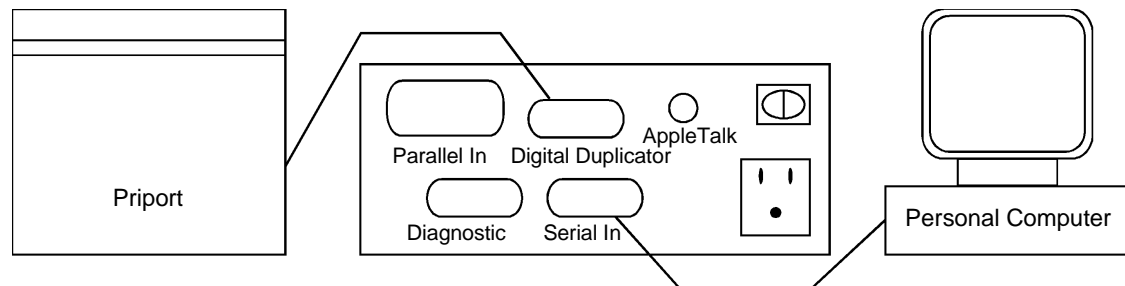
7.11 HARDWARE INSTALLATION

1. The Controller is connected by cables between both the computer and the Priport. (The computer and Priport are not directly connected to each other.) The inputs to the Priport Controller replicate those of a standard printer, including Parallel, RS-232 Serial and AppleTalk® inputs. Simply remove the cable from the printer and insert it into the appropriately labeled connector on the backpanel of the Controller. **DO NOT CONNECT A SERIAL CABLE TO THE DIAGNOSTIC PORT.**
2. The Controller is connected from the Priport port on its backpanel to the input port on the back of the Priport. The required cable is a standard IBM-PC parallel printer cable which is included with the Controller.
3. Cabling Diagrams:

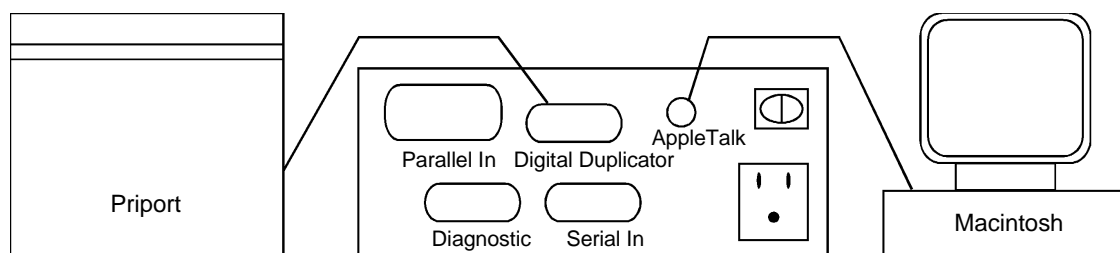
Parallel Connection



Serial Connection



AppleTalk Connection



PC RIP-10
Priport
Controller

7.12 PRIPORT CONTROLLER CONFIGURATION

1. Factory Settings:

The Controller comes preset with the following factory defaults:

- Input Buffers: Parallel Inputs - 256 Kb
 Serial Inputs - 4 Kb
 AppleTalk - Not applicable
- Page Size: US Letter (8-1/2" x 11") for U.S. and Canada
 A4 (210mm x 297mm) for International
- Mode: PostScript compatible

2. Controller Configuration Programs:

Three diskettes have been provided with the Controller: one 5 1/4" and one 3 1/2" for IBM and compatible computers and one 3 1/2" for Apple Macintosh computers. Each of these configuration programs allows you to change the factory settings of the Controller (including the ones listed above) until the next power down of the Controller or permanently if desired.

NOTE: See Step 9 on page 7-26 on how to save configuration changes you have made with an IBM and compatible computers. See Step 5 on page 7-29 on how to save configuration changes made with an Apple Macintosh.

7.13 CONFIGURATION OF IBM PC AND COMPATIBLES

The configuration program is menu-driven and has been designed to be very simple to use. (If you will be changing output page size regularly, you should copy these files to your hard disk.) When the initial configuration is completed and saved, you should rarely need to use this program disk.

- If you have the Controller connected to your IBM PC or compatible output port labeled **LPT1** and you wish to output in **PostScript mode** with the **default page size listed above**, you will not need to use this program to make any configuration changes from the factory settings.

- If you have the Controller connected to your IBM PC or compatible to an output port labeled **LPT2, COM1, or COM2**, or wish to change to **PCL-5** mode, or wish to change to any page size **other than the default page size listed above**, you will need to use this program.
- If you have **more than one computer (IBM compatibles and/or a Macintosh)** connected to the Controller, **you should be cautious about switching modes between PostScript and PCL-5** compatibility. To achieve the best output results, both IBM compatibles should output files in the same mode. Also, if the Controller is set in PCL-5 mode for the IBM's, the Macintosh will be locked out because it can only send PostScript compatible files.

Step 1. Insert the Utility Disk in drive A. (If you are copying these files to your hard disk, first create a subdirectory named PCRIP. At the DOS prompt type **md PCRIP <ENTER>** Next, type **cd PCRIP <ENTER>** At the **C:\PCRIP** prompt, type **COPY A:.* <ENTER>** and skip to Step 3.)

Step 2. Type **A: <ENTER>**

Step 3. Type **PCRIP <ENTER>** (The Main Menu Bar will appear across the top of the screen.)

File Page Install PC Port Input Bufers Special Help Quit

The "**Help**" Menu item explains the general function of each item in the menu bar. The first item on each of the pull-down menus is context-sensitive help. This item describes the functions of all the other items available on whatever pull-down menu you have open.

Step 4. Use the right arrow key to move the highlight over the "**PC Port**" pull-down menu and **<ENTER>** The selections available are: **Printer Port LPT1, Printer Port LPT2, Printer Port COM1, Printer Port COM2, Printer Port to LOG file, and Printer Port to NULL.**

Step 5. Use the up or down arrow keys to highlight the correct PC output port and **<ENTER>**. This port selection should match the name of the physical port on the back of your computer that is connected by cable to the Controller. Any selection from any menu will move you back up to the main menu bar.

If you selected COM1 or COM2, you must select the "**PC Port**" pull-down menu again to specify a baud rate. The selections available are: **Com Port Baud Rate 1200, Com Port Baud Rate 2400, Com Port Baud Rate 4800, Com Port Baud Rate 9600 and Com Port Baud Rate 19.2K.** This selection will tell the Controller what speed to expect data from your computer. Most serial port users should select "**Com Port Baud Rate 19.2K**".

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Printer
Controller**

- Step 6.** Use the left arrow key to move the highlight back to the "Install" pull-down menu and **<ENTER>**. The selections available are: **Set PostScript compatible input, Set PCL-5 compatible input, Enable AppleTalk, Disable AppleTalk, Reset to Factory Config, Print Test File, Print Diagnostic Status Page, Save Configuration Changes.** You must use this menu to select PCL-5 mode or to re-select PostScript mode if you have previously selected PCL-5 mode. You may also use items from this menu to permanently save the configuration settings you have made during this session, turn AppleTalk on or off, print a test page, print the diagnostic status page or reset the Controller back to the original factory settings. Just use the up or down arrow keys to highlight your choice and **<ENTER>**.
- Step 7.** Use the left arrow key to move the highlight back to the "Page" pull-down menu and **<ENTER>**. The selections available are: **Page Size A4, Page Size B4, Page Size B5, US Letter, US Legal.** You must use this menu to select an output page size other than the factory default. Just use the up or down arrow to highlight your new output page size and **<ENTER>**.
- Step 8.** If your computer is connected to the Controller through COM1 or COM2, **OR if it is the only computer connected, you may also want to change the input buffers. The larger the input buffer, the faster your print job will be processed, however there is a limited amount of memory to be allocated to input buffers.** Use the right arrow key to move the highlight to "InputBufrs" pull-down menu and **<ENTER>**. The selections available are: **Parallel Input Buffer Size = 0K, Parallel Input Buffer Size = 256K, Parallel Input Buffer Size = 256K, Serial Input Buffer Size = 0K and Serial Input Buffer Size = 64K.** If you are the only computer user hooked to the Controller, you should select the maximum available. For a single computer connected to COM1 or COM2, use the down arrow key to select "**Serial ... = 64K**". For a single computer connected to LPT1 or LPT2, use the down arrow to choose "**Parallel ... = 512K**", though the factory default of 256K should be adequate.
- Step 9.** When all the configuration changes are completed, you must decide if you want to make them permanent. If you do not complete this step, any changes you have made this session will be lost the next time the Controller is turned off. If you do complete this step, the Controller will remember any changes you have made through all power cycles. Use the right or left arrow to highlight the "Install" pull-down menu and **<ENTER>**. Use the down arrow key to select "**Save Configuration Changes**" and **<ENTER>**. You can change and save the configuration settings of the Controller as often as you wish.

The two remaining Main Menu items, "**File**" and "**Special**", provide functions which may be useful during setup or reconfiguration of the Controller.

The following selections are available in the "**File**" menu: **Print a File, Eject Page, Info About this Program and Quit (Exit) this Program**. To print an output file from the hard disk or a diskette as a test of the configuration before saving or exiting the program, you would use the "**Print a File**" command. To clear the Input Buffer of the Controller or to create a master for a blank page, you would use the "**Eject Page**" command. To check the revision number of the PCRIP program which you are using, you would choose "**Info About this Program**". You may also exit the program from this menu.

The following selections are available in the "**Special**" menu: **Set Inter-Job Timeout Value, Disable Formfeed between Jobs, Enable Formfeed between Jobs and Enter Executive Mode**. The factory default setting for Inter-Job Timeout Value is 20 seconds. In other words, if the Controller does not receive any data from the computer for more than 20 seconds, the Controller will assume that the print job is complete and signal the start of master making in the Priport. Some software applications, specifically Windows-based programs which generate graphic-intensive output, may require a longer timeout value. If you use the "**Set Inter-Job Timeout Value**" to change this setting, we recommend that you increase the timeout value in 10 second increments until you achieve the desired output results. The factory default setting also has Formfeed Enabled. If the PCL-5 output file does not include a formfeed, the Controller will automatically generate one. You may turn this feature off with "**Disable Formfeed between Jobs**" and turn it back on with "**Enable Formfeed between Jobs**". This menu also provides an advanced PostScript feature called "Executive Mode" which allows direct entry of PostScript programming commands from the keyboard of the computer.

7.14 CONFIGURATION OF MACINTOSH COMPUTERS

The utility disk contains a program called "FontDownLoader" and 13 small PostScript format files. These files contain the instructions for changing the output page size, printing the diagnostic status page, saving configuration changes permanently and numbering multiple Controllers if more than one Controller is connected to the same AppleTalk network. (If you will be changing the output page size regularly, you should copy the entire PCRIIP Utility folder onto your desktop or hard disk.)

- The files which will be used most frequently are the output page size selection files. They are "A4", "B4", "B5", "US Letter" and "US Legal".
- If you wish to verify that the page size selection is correct, you can select "Diagnostic Status Page." This file will generate a one page print-out of PostScript font samples as well as a listing of the current Controller settings at the bottom of the page. See Appendix A for an example of this Diagnostic Status Page output.
- If you have more than one Controller installed on an AppleTalk network, you will need to add a number to its name so that Appletalk can distinguish between the Controller units. The file names are "Priport #1", "Priport #2", "Priport #3", etc. If you only have one Controller installed on the AppleTalk network, you will not need to use these files at all.
- If you have changed the output page size or the name/number of the Controller and wish to retain that change as the Controller's power on default, you will also need to use "Save Config Changes."

- Step 1.** Insert the Priport Controller Disk in the drive and double click on the floppy icon to open it.
- Step 2.** Double click on the Priport Controller folder to open it and then double click on "Downloader 5.0.1". (A new window will NOT appear on the screen but a new smaller menu bar with only three pull-down menus--**File Edit Special**--will appear.)
- Step 3.** Under the File Menu, the selections available are: **Download Font and Download PostScript File** and **Quit**. Double click on **Download PostScript File**. (A dialog box listing the 13 possible file choices will appear on the screen.)
- Step 4.** Point and click to select the file which will make the desired configuration change and click on Open. (While the file is being sent, AppleTalk will display a printer status report. When the file has been successfully received by the Controller, the following message will be displayed "The download was successful".)

Step 5. Click OK. If you wish to make any other changes, start again at Step. 3. If you are finished making or saving the configuration changes, select **Quit** under the File menu.

7.15 APPLICATION SOFTWARE SET-UP

1. Printer Drivers:

Each desktop publishing or word processing application provides printer drivers for PostScript and PCL-5 compatible printers. Please follow the instructions supplied with your application software to select the appropriate printer for the page size you wish to send to the Priport. We have supplied examples for MS Windows 3.1 and WordPerfect.

2. Printer Selection:

A. PostScript-Compatible Printing - DOS:

- Windows 3.1 applications (Pagemaker, Corel Draw, MS Word for Windows, etc.) should select "**Postscript Printer**" for the following page sizes: Letter, Legal, A4 and B5.
- WordPerfect 5.1 users should select a "**TI Microlaser**" for the following page sizes: Letter, Legal and A4.
- WordPerfect 5.1 users needing B4 or B5 page sizes should install the WPPSE1.ALL file (supplied on the 3 1/2" Priport Configuration Disk for IBM and compatibles) and select "**Priport Controller**".

B. PostScript-Compatible Printing - Macintosh:

- Using the pull-down menu from the Apple icon, point and click on Chooser.
- Within the Chooser left-hand dialog box, point and click on LaserWriter. (The Macintosh will then poll the AppleTalk network and return the **Priport** name in the right-hand dialog box.)
- If it is not already selected, you should point and click on **Priport** now.

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When you close the Chooser, the Macintosh is ready to send files to the Controller from any Macintosh software program. This driver supports the printing of all possible output page sizes through the Controller; however, you may be limited by the page size choices within the specific Macintosh application itself.

C. PCL-5 Compatible Printing - (only applicable for DOS applications):

All users should select an "**HP LaserJet III**" printer within their software application for letter, legal or A-4 page sizes. (Other page sizes are not available.)

7.16 PRIPORT CONTROLLER OPERATION

1. Power-On/Power-Off Sequence:

Please follow the steps listed below to turn on and off your system:

- Power-On:
 1. Computer
 2. Priport
 3. Controller
- Power-Off:
 1. Controller
 2. Priport
 3. Computer

2. Controller - Front Panel Indicator Lights:

- Power-On Light (left hand light): When light is on, power is on.
- Ready Light (right hand light)

3. Ready Light:

A. The Controller is ready for operation after the following sequence occurs:

- At power on, the ready light remains off for a short time.
- When ready light turns on, the Controller is ready for use.

B. Ready Light--Slow Flash:

- When a slow flash occurs, the Controller is processing the document.

C. Ready Light--Quick Flash:

- When a quick flash occurs, the Controller has encountered an error condition in processing the document. (See the Troubleshooting section for possible error conditions and solutions.)

D. Ready Light--One Long + Two Short Flashes:

- When one long and two short flashes occur, either the Priport is off-line or the Priport is still waiting to print copies off a new master which is currently on the drum.

7.17 COMMONLY ASKED QUESTIONS

1. How far can I have the Controller from the computer?

- The official specification for **parallel** cables recommends a length not greater than 10 feet (appr. 3 meters), however you can probably use a cable up to 25 feet (appr. 8 meters) without encountering any line communication problems.
- The official specification for **serial** cables recommends a length not greater than 50 feet (appr. 16 meters), however you can probably use a cable up to 100 feet (appr. 30 meters).
- The **AppleTalk** specification recommends a cable length of not greater than 1000 feet (appr. 300 meters) which should not be exceeded.

2. How far can I have the Controller from the Priport?

- The official specification allows for a 10 foot (appr. 3 meter) cable. A 6 foot (appr. 2 meter) cable was supplied with the Controller, but you can probably use a cable up to 20 feet (appr. 6 meters) if necessary. The potential for line communication problems are greater the farther the Priport is from the computer.

3. Which is faster--the serial port or the parallel port?

- The parallel port connection on the back panel of the Controller will receive data from the computer as much as eight times faster than the serial connection. However, because of the higher data transmission rate, you are limited to a maximum parallel cable length of 25 feet (appr. 8 meters).

4. How many computers can you run from the Controller?

- Three. One IBM or compatible connected to the parallel port, one IBM or compatible connected to the serial port, and one Apple Macintosh or Macintosh network connected to the AppleTalk port.

5. Will the Controller work with a laptop or notebook computer?

- Yes, all computers connect to the Controller as if it were a standard computer printer.

6. Is any special wiring required for the Controller?

- No, it will work on 110 or 220 volt systems by using the appropriate power cord.

7. How much RAM memory does the Controller have?

- It comes standard with 4 megabytes of RAM.

8. What if my file size is over 4 megabytes? Will the Controller be able to process the file?

- Under most circumstances, the answer is yes, due to a process built into the Controller called "power banding". If your files are very large, you might want to consider upgrading to 16 megabytes of RAM. Please contact your local Sales Representative for more information.

9. Can you add additional memory?

- Yes, the Controller can be upgraded from 4 megabytes to 16 megabytes of RAM. Please contact your local Sales Representative for more details on this upgrade.

10. Must you configure all software when you install the Controller?

- Yes and no. The Configuration Program supplied with the Controller must be installed on your computer in order for you to change any of the factory settings. For example, the Controller comes preset in PostScript mode with a US Letter (8 1/2" X 11") or A4 page size. If you wish to switch to PCL-5 mode or to a different page size, you must use the Configuration Program to make those changes. In order to output to the Priport through the Controller, you need to select the appropriate printer driver in your software application for the mode (PostScript or PCL-5) and page size you wish to print.

11. Will the Controller work with Windows 3.1?

- Yes, as long as you select the appropriate printer driver for the page size you need.

12. Will the Controller work with all application software programs?

- As there are no international software standards which apply to the over 10,000 software applications worldwide, it is impossible to give a definitive answer for each and every program in the DOS, Windows and Macintosh environments. We have tested and know that the most popular software applications, MS Windows 3.1, WordPerfect, MS Word, etc. work extremely well. The Controller is designed to emulate (act as if it were in fact) a large variety of PostScript printers or a HP LaserJet III for PCL-5 output. Therefore, if your software application allows you to select either a PostScript printer or a HP LaserJet III, you should be able to send files to the Priport through the Controller to produce documents.

13. Will the Controller work on a network?

- Yes, if the Controller is connected to a host computer. The computer used as a host for the Controller can be the file server, a printer server or any one of the network nodes. Other than the AppleTalk port for Macintosh networks, there is no port on the Controller, at this time, which allows for a connection directly to the network.

14. What fonts are built into the Controller?

- The 35 standard PostScript fonts plus the 8 standard Intellifont PCL-5 fonts.

15. Can you use other downloaded soft fonts with the Controller?

- Yes, you can use downloaded soft fonts in both PostScript and PCL-5 compatibility modes. You should be aware that the amount of RAM the soft fonts occupy may impact the processing speed.

16. Can you reverse scan with the Controller and the Priport?

- No, but you could buy a scanner and hook it directly to your computer. While this process is simpler in the Macintosh environment, it is still a very complex project in either the PC or Macintosh environment and should be undertaken only by an expert computer user. When scanned images are saved as graphic files, they can be included in documents you create in various software applications.

17. Can you set the number of copies to print from the computer?

- No, the number of copies to be printed must be set from the Priport control panel. This was done intentionally so that you can check that the correct paper and ink are in the Priport before printing.

18. How important is the "Auto Cycle" key in the printing of a job?

- It is important that the Priport print a minimum of one copy in addition to the proof copy for each new master. Until at least one copy has been printed, the Priport will not allow a new master to be created. Therefore, we recommend that when using the Controller that you also use the "Auto Cycle" mode to enable the system to clear itself and be ready for the next print job.

19. What does the Diagnostic Port do?

- When the diagnostic plug used by the Customer Engineer is installed in the Diagnostic Port and the Controller is turned on, the Priport will output a Diagnostic Status page which includes Postscript font samples and configuration information for the Controller. (See Appendix A.)

20. If I have a software or hardware question, who do I call?

- Your local sales/service organization should be contacted first.

7.18 TROUBLESHOOTING

The following are symptoms you might encounter and the appropriate solution for each:

1. There is a quick flash of the ready light.

- An error condition has been detected in the Priport. First, check for a loose or missing cable between the Controller and the Priport.
- Next, check the control panel of the Priport for a flashing master jam indicator. Clear the jam and, if possible, print one proof copy from the newly created master. If the image on the proof copy is complete, you can print more copies. If the image is not complete, push the reset button on the Priport control panel and the Controller will resend the document to the Priport to create a new master.
- If you are unable to print a proof copy, you will need to toggle the On Line button off and back on again to clear the error and the Controller will resend the document to create a new master.

2. There is no master making at all.

The Customer Engineer who installed the Controller should have tested both the connection between the Controller and the Priport, the connection between your computer and the Controller and the system as a whole.

- If the Controller ready light is producing a quick flash, follow the steps listed above to clear the error.
- If the Controller ready light is producing one long and two short flashes, check to see if the Priport may be off-line. Put the Priport back on-line and verify that the PCRIP-10 ready light has stopped flashing.
- If the Priport is not off-line, then the Priport is waiting to print from a new master. You may either print one copy from the master currently on the drum, or push the Priport's on-line button off and then on again to clear this condition.
- If you are sending PostScript files to the Controller, make sure that you have the correct PostScript compatible printer selected as the output printer within in your application software **and** the Controller has been configured for PostScript mode.
- If none of the steps above have produced any master making, it is possible that the PostScript file you are trying to print may be corrupted. You can test for actual Postscript output by printing the Diagnostic Status Page through the Configuration Program. If you can not successfully print this page (which is a special PostScript compatible file), you should contact your local service organization for help.

3. A new master is made, but only blank pages print out.

- Verify that the page size selected in the application software, the Controller configuration and the Priport all match.
- Make sure that you have the correct printer selected in the application software for either PostScript or PCL-5 mode.
- Check that the document being sent to the Controller is not blank.
- If you have followed all of the steps listed above and still get blank pages as output, contact your local service organization.

4. My document prints out as unrecognizable text.

- This symptom is usually the result of sending a PostScript file to a Controller that is still configured in PCL-5 compatibility mode. Check to make sure that you have the correct printer selected in the application as well as that the Controller is in PostScript compatibility mode.

5. Part of the document image I can see on my monitor is missing when it prints.

- Verify that the page size **and** the page orientation (portrait or landscape) selected in the application software, the Controller configuration and the Priport all match.

**6. My Macintosh gives an error message which says
"Priport is not available on AppleTalk".**

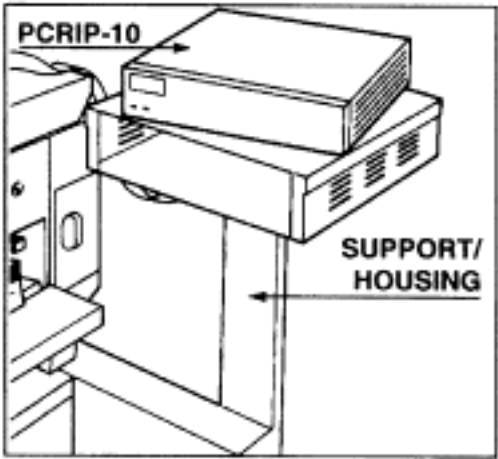
- Make sure that the Controller is powered on.
- If both an IBM or compatible and a Macintosh are connected to the Controller, check to see if the Controller has been switched to PCL-5 mode for the IBM PC. If so, the Macintosh will be locked out until the Controller is switched back to PostScript compatibility mode.
- If only one Macintosh is connected to the Controller, contact your local sales/service organization for additional help.

7.19 APPENDIX A - DIAGNOSTIC STATUS PAGE

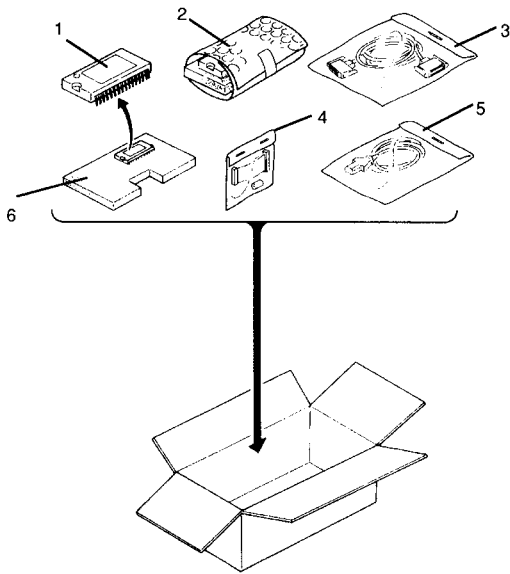


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7.20 PARTS CATALOG

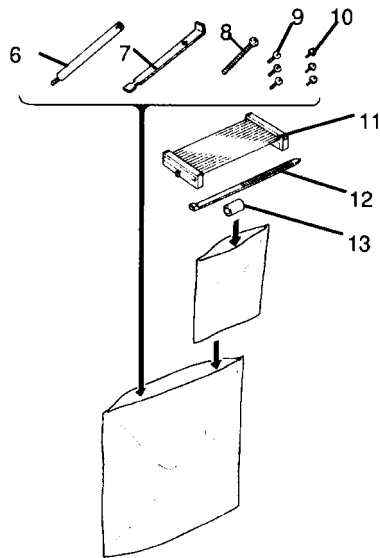


INTERFACE KIT (TYPE 2)



INDEX	PART NO.	DESCRIPTION
1	C544 1005	IC-Interface-AM27C512-150D
2	C544 1301	IC-Main-M27C 512-12F1
3	C544 1510	Controller Cable
4	--	Accessories
5	C544 1500	Interface Cable - Type 2
6	C544 1100	Interface Board

ACCESSORIES



INDEX	PART NO.	DESCRIPTION
6	C544 2110	PCB Stud
7	C544 2112	Harness Support Bracket
8	0313 0350B	Philips Pan Head Screw - M3x8
9	0960 3008W	Philps Flange Screw - M3x8
10	0960 4008W	Philps Flange Screw - M3x8
11	C544 1600	Flat Cable - N810
12	1105 0042	Wire Band
13	C203 2031	Main Board Spacer

PCRIIP-10
Priport
Controller

Gestetner® **RICOH**® **savin**®

C225 SERVICE MANUAL

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OVERALL MACHINE INFORMATION

1. SPECIFICATIONS

Configuration:	Desk top
Master Making Process:	Digital
Printing Process:	Full automatic one-drum stencil system
Image Mode:	Line/Photo
Original Type:	Sheet
Original Weight:	64 g/m ² ~ 104.7 g/m ² (17.0 lb ~ 27.9 lb)
Original Size:	Max: 216 mm x 356 mm (8 1/2" x 14") Min: 90 mm x 140 mm (3 1/2" x 5 1/2")
Paper Size:	Max: 216 mm x 356 mm (8 1/2" x 14") Min: 90 mm x 140 mm (3 1/2" x 5 1/2")
Paper Weight:	52 g/m ² ~ 150 g/m ² (13.8 lb ~ 39.9 lb Bond paper)
Printing Area:	LG drum: 210 mm x 349.6 mm (8.3" x 13.8") or less
Printing Speed:	70/100/130 cpm (3 settings)
First Copy Time:	28 seconds ± 2 seconds (Legal Drum)
Second Copy Time:	30 seconds ± 2 seconds (Legal Drum)
Leading Edge Margin:	5 mm ± 3 mm (0.2" ± 0.12")

Trailing Edge Margin:	1 mm ± 1 mm (0.04" ± 0.04")
Paper Feed Table Capacity:	500 sheets (80 g/m ² , 20.0 lb)
Paper Delivery Table Capacity:	500 sheets (80 g/m ² , 20.0 lb)
Master Eject Box Capacity:	More than 25 masters
ADF Original Capacity:	6 sheets or a 0.6 mm height
Weight:	55 kg (122 lb)
Power Source:	120 V, 60 Hz, more than 3.6 A
Power Consumption:	Master Making: Less than 0.22 kW Printing: Less than 0.22 kW
Dimensions: (W x D x H)	[Tables closed] 692 mm x 612 mm x 440 mm (26.2" x 24.1" x 17.3") [Tables open] 1050 mm x 612 mm x 440 mm (41.3" x 24.1" x 17.3")
Pixel Density:	300 dpi
Print Counter:	7 digits
Master Counter:	6 digits

Noise Emission:

Printing Speed	Operator position	Bystander position
70 rpm	less than 66 dB	less than 64 dB
100 rpm	less than 70 dB	less than 68 dB
130 rpm	less than 72 dB	less than 71 dB

The measurements are to be made in accordance with ISO 7779.

Optional Equipment:

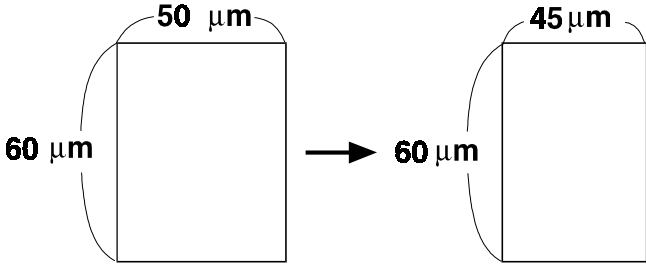
Key Counter, Tape Dispenser, PCRIP-10
Controller with Interface Kit Type 2,
Controller Support/Housing Assembly.

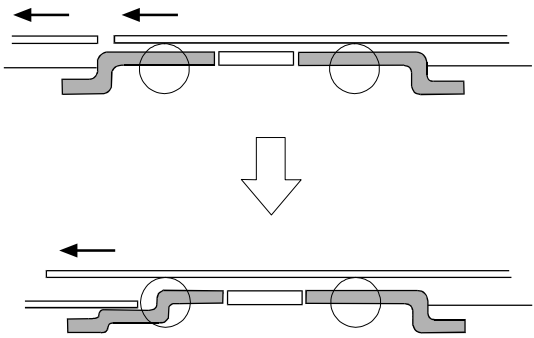
Consumables:

Name	Size	Remarks
Thermal master	Length: 125 m (410 ft)/roll Width: 240 mm (9.5")	260 masters can be made per roll . Storage Conditions: –10 ~ 40°C, 10 ~ 90% RH
Ink	600 cc/pack	Storage Conditions: –5 ~ 40°C, 10 ~ 90% RH
Tape for tape maker	35 m (114.8 ft)/roll	

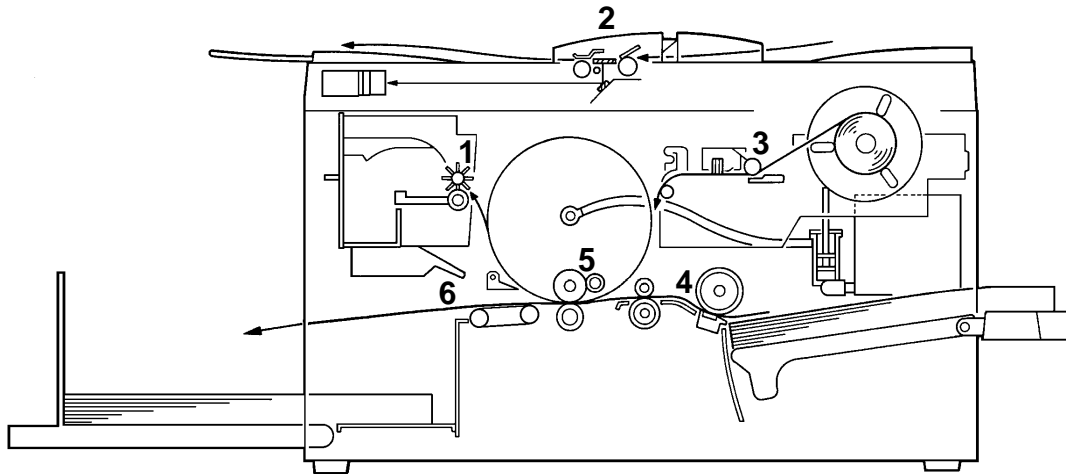
Overall
Machine
Information

2. ESSENTIAL DIFFERENCES BETWEEN THE VT1730 AND THE VT1800

No.	Item	Remarks
1	Paper Delivery System	The paper delivery system has been changed from a delivery roller system to a vacuum transport system. Due to this modification, 5 mm side margins are not required for originals.
2	Paper Table Set Switch	A magnetic switch has been added to detect whether or not the paper table is in the paper feed position. Indicator "B" will light when the paper table is in the low position.
3	Thermal Head	<p>To minimize ink set-off, the shape of the thermal head heating elements have been changed as shown below.</p> 
4	Paper Table Side Fences	For easy side fence positioning, a rack and pinion mechanism has been installed to allow the left and right side fences to move together.
5	Master Eject Box	To prevent the used masters from dropping when the customer takes out the master eject box, a master holder has been added to the master eject box.
6	Paper Delivery Table	The delivery end fence and the side fences can be folded inward when closing in the delivery table.
7	Master Eject Box Capacity	The pressure for compacting the used master in the master eject box has been increased. In addition, the master eject box capacity has been increased from 15 to 25 used masters.
8	Economy Mode	If Economy mode is selected, the thermal head energy is reduced by 15% (the pulse width is decreased). The image density will be slightly lighter, and ink consumption will be less than normal.

No.	Item	Remarks
9	Exposure Glass Bracket	<p>To prevent the scanned original from being pushed out by the next original, the shape of the exposure glass bracket has been changed as shown below.</p> 
10	Original Feed Spring Plate	To ensure proper feeding of thin paper, the angle of the original feed spring plate has been changed.
11	Paper Feed Timing	To reduce noise which occurs when the paper hits the 2nd feed roller, the first paper feed length has been reduced. (The buckle between the 1st and 2nd paper feed rollers has been shortened.)
12	Skip Feed	A user can select from 2 to 9 rotations of the drum while one sheet of paper is fed. This will increase the image density.
13	Quality Start	The first print tends to be light. To increase the image density of the first print, Quality Start mode can be selected. In this mode, the first print (only) will be made at 30 rpm.
14	Image Processing in the "Darker 2" setting	<p>In the VT1730, only the A/D conversion parameters are changed when the image density setting is changed. This does not change the density of solid black areas.</p> <p>In the VT1800, if "Darker 2" is selected on the operation panel, the thermal head energy is increased to 115% of the normal setting. The solid black areas will become darker.</p>

3. PRINTING PROCESS



1. Master Ejecting:



2. Scanning:



3. Master Feeding:



4. Paper Feeding:



5. Printing:



6. Paper Delivering:

The machine will eject the used master which is wrapped around the drum into the master eject box.

The machine will scan the original using the CCD, through the mirror and the lens, while feeding the original.

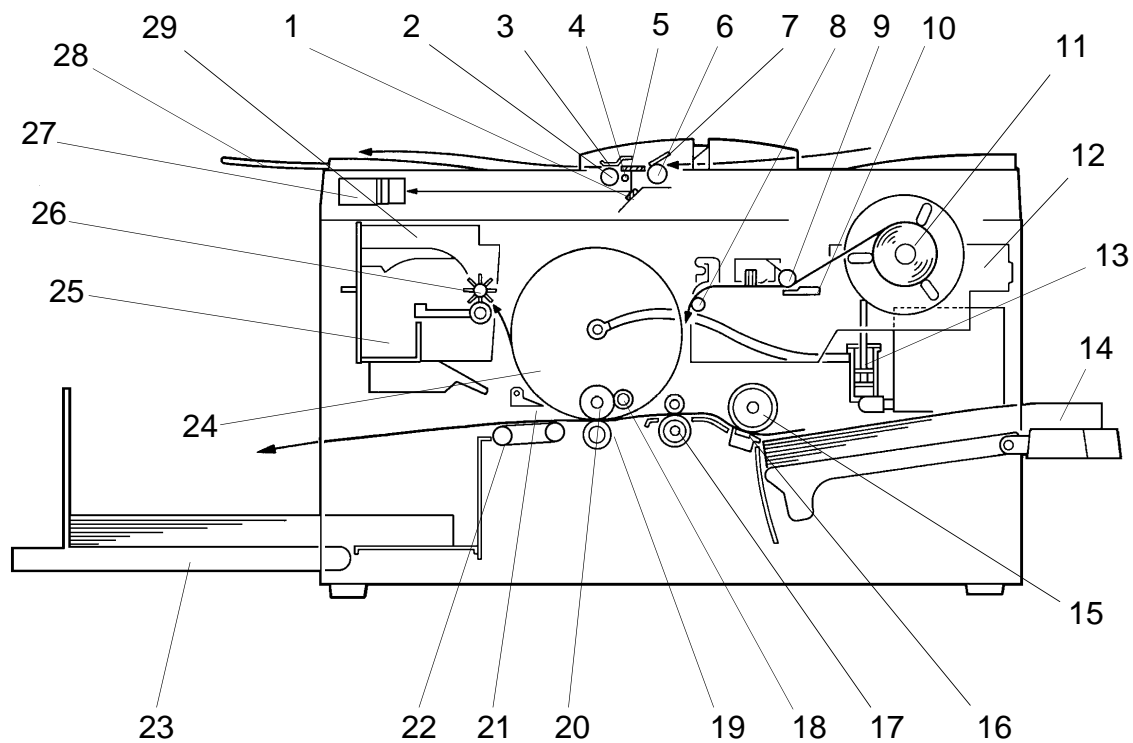
The machine will convert the analog signals from the CCD into digital signals and will then send the signals to the thermal head to make holes (plot) in the master. The new master will then be wrapped around the drum.

The machine will feed the paper to the drum.

The pressure roller will press the paper fed from the paper feed section against the surface of the drum. This will transfer the ink through the drum screen, the master and onto the paper.

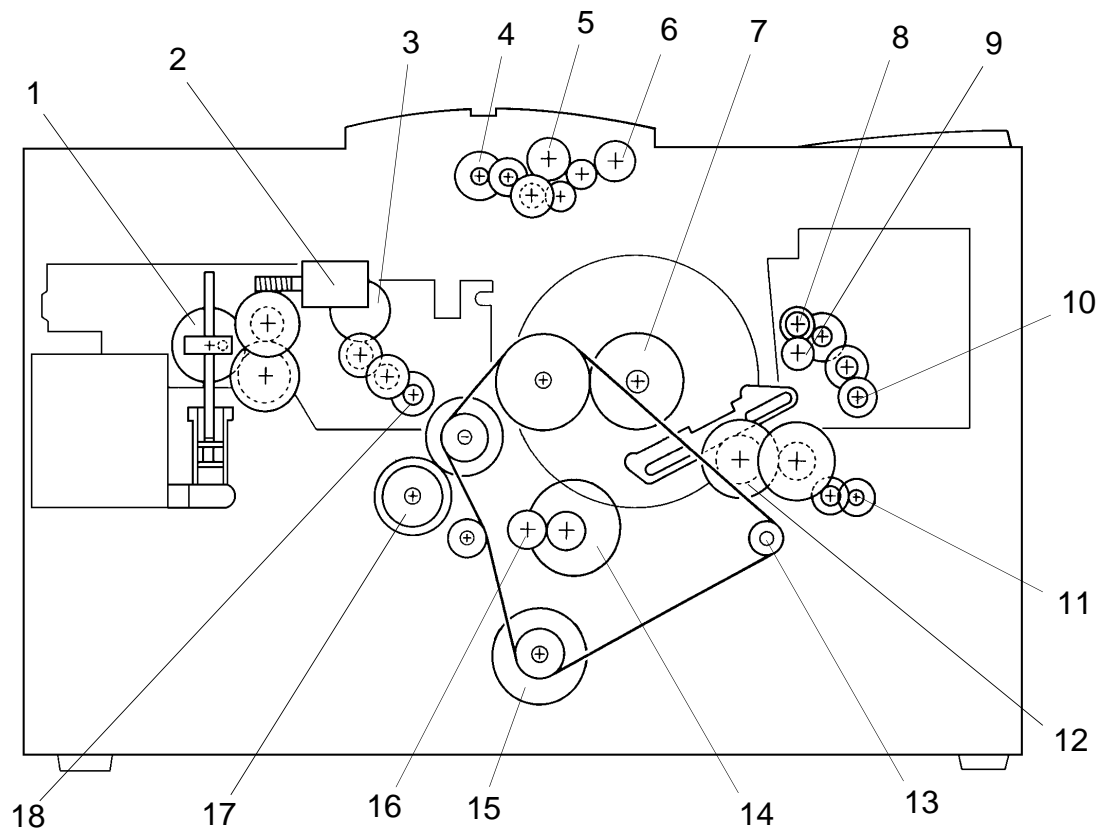
The printed paper is separated from the surface of the drum by the exit pawls and the airknife. The separated paper is fed to the delivery table by the transport belt and the vacuum fan.

4. MECHANICAL COMPONENT LAYOUT



- | | |
|----------------------------|--------------------------|
| 1. Mirror | 16. Friction Pad |
| 2. Original Feed Roller | 17. 2nd Feed Roller |
| 3. Original Pressure Plate | 18. Doctor Roller |
| 4. Exposure Lamp | 19. Press Roller |
| 5. Exposure Glass | 20. Ink Roller |
| 6. Original Pick-up Roller | 21. Exit Pawl |
| 7. Original Friction Pad | 22. Transport Unit |
| 8. Master Tension Roller | 23. Paper Delivery Table |
| 9. Platen Roller | 24. Drum |
| 10. Thermal Head | 25. Master Eject Box |
| 11. Master Roll | 26. Master Eject Roller |
| 12. Plotter Unit | 27. CCD Unit |
| 13. Ink Pump | 28. Original Exit Tray |
| 14. Paper Table | 29. Master Eject Unit |
| 15. Paper Feed Roller | |

5. DRIVE LAYOUT



1. Pump Drive Gear

2. Ink Supply Motor

3. Platen Roller Gear

4. Original Feed Motor

5. Original Pick-up Roller

6. Original Feed Roller

7. Drum Drive Gear

8. Upper Master Eject Roller Gear

9. Lower Master Eject Roller Gear

10. Master Eject Motor

11. Master Clamper Motor

12. Master Clamper Drive Gear

13. Transport Unit Drive Pulley

14. 2nd Feed Motor

15. Main Motor

16. 2nd Feed Roller Gear

17. Paper Feed Roller Gear

18. Master Feed Motor

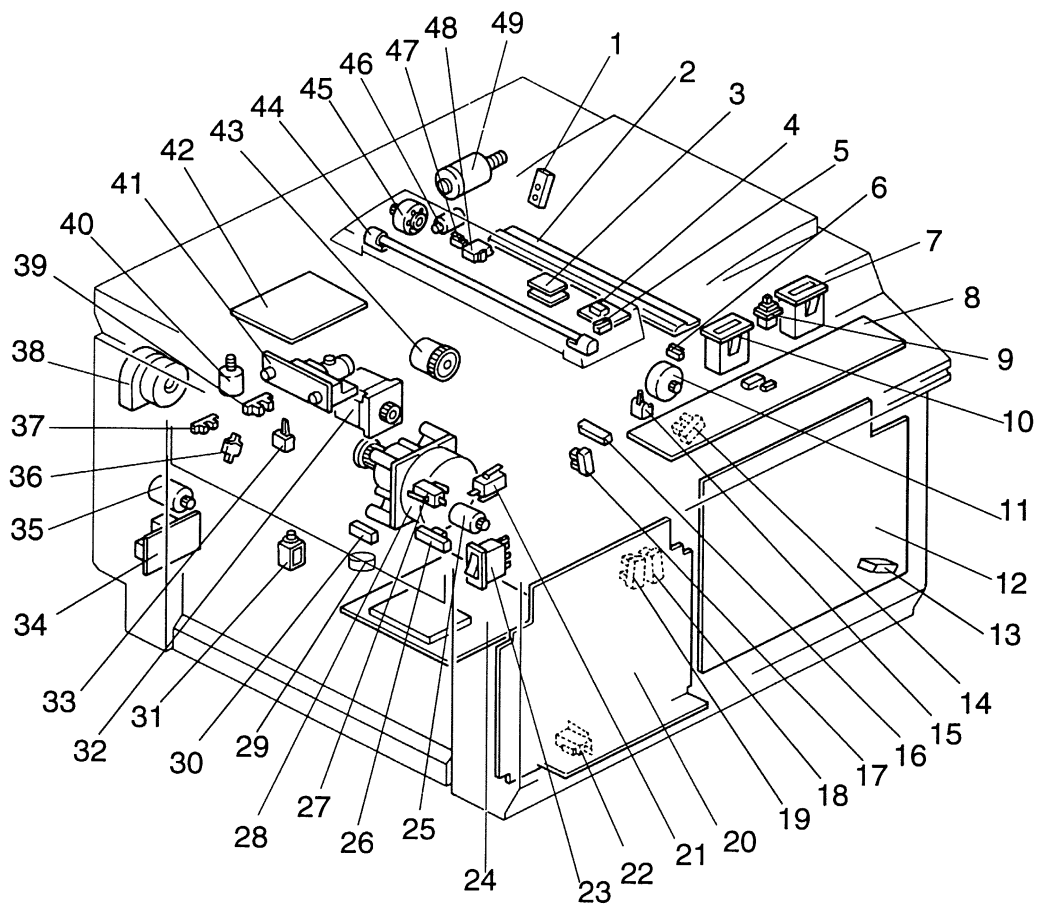
6. ELECTRICAL COMPONENT DESCRIPTION

Index No.	Name	Function
Motors		
11	Master Feed	Feeds the master to the drum.
25	Master Eject	Sends the used master into the master eject box.
28	Main	Drives the paper feed, drum, printing and paper delivery unit components.
29	Vacuum	Provides suction to ensure that the paper is held firmly onto the transport belt.
32	2nd Feed	Drives the 2nd feed roller.
35	Master Clamper	Open and closes the master clamper.
38	Air Knife	Generates the air flow used to separate the paper from the drum.
40	Pressure Plate	Drives the pressure plate.
45	Original Feed	Transports the original through the ADF unit for scanning.
46	Master Cutter	Cuts the master.
49	Ink Supply	Drives the ink pump to supply ink.
Solenoid		
31	Pressure Release Solenoid	Releases the press roller to apply printing pressure.
Sensors		
1	Master End	Detects when the plotter unit has run out of master material.
3	Original Registration (Upper: light receiver, Lower: light emitter)	Informs the CPU of the position of the original. Also used to detect an original misfeed.
14	Feed Jam Timing	Determines the paper misfeed check timing.
15	Paper End	Detects if there is paper on the paper table.
16	Registration	Detects paper misfeeds.
17	Feed Start Timing	Determines the paper feed start timing.
18	Exit Jam Timing	Determines the master misfeed check timing.
19	Master Eject Position	Detects the master eject position of the drum.
26	Drum Master	Detects if there is a master wrapped around the drum.
30	Exit	Detects paper misfeeds.
33	Master Eject	Detects used master misfeeds.
37	Full Master	Detects if the master eject box is full.
39	Pressure Plate H.P.	Detects the pressure plate home position.
48	Original Set	Detects if there is an original in the ADF unit
Switches		
5	ADF Open	Checks if the ADF cover is open.
6	Left Cutter	Determines the left limit position of the cutter.
9	Master Cut	Starts the cutter motor to cut the master.
13	Paper Table Set	Detects if the paper table is in the paper feed position.
21	Scanner Unit Open	Checks if the scanner unit is open.

Index No.	Name	Function
22	Delivery Cover Open	Checks if the delivery cover is open.
23	Main	Turns the power on or off.
27	Master Eject Box	Checks if the master eject box is installed correctly.
36	Master Clamper	Detects the master clamper open/close position.
47	Right Cutter	Determines the right limit position of the cutter.
Printed Circuit Board		
4	Lamp Control	Controls the power to the exposure lamp.
8	Operation Panel	Interfaces the CPU with the operator.
12	Main	Controls all machine functions.
20	Power Supply	Provides power for all dc components.
24	Main Motor Control	Controls the main motor speed.
34	Noise Filter	Filters out electrical noise on the ac power input lines.
41	CCD	Converts the reflected light from the original into an electrical signal (analog).
42	A/D Conversion	Converts the analog signals from the CCD into digital signals.
Counters		
7	Print	Keeps track of the total number of prints made.
10	Master	Keeps track of the total number of masters made.
Others		
2	Thermal Head	Plots (burns) the master by generating heat.
43	Paper Feed Clutch	Transmits main motor drive to the paper feed roller at the appropriate time.
44	Exposure Lamp	Illuminates the original for exposure.

7. ELECTRICAL COMPONENT LAYOUT

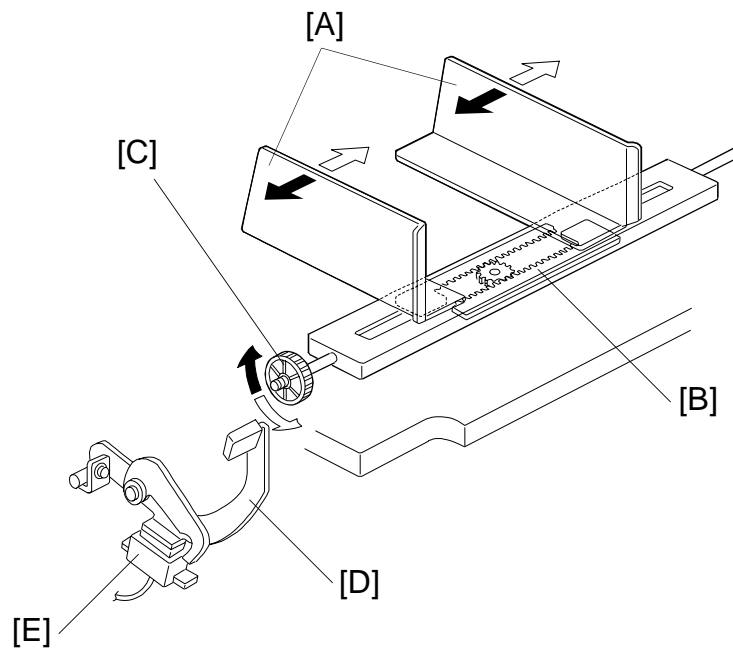
Overall
Machine
Information



DETAILED SECTION DESCRIPTIONS

1. PAPER FEED

1.1 PAPER TABLE



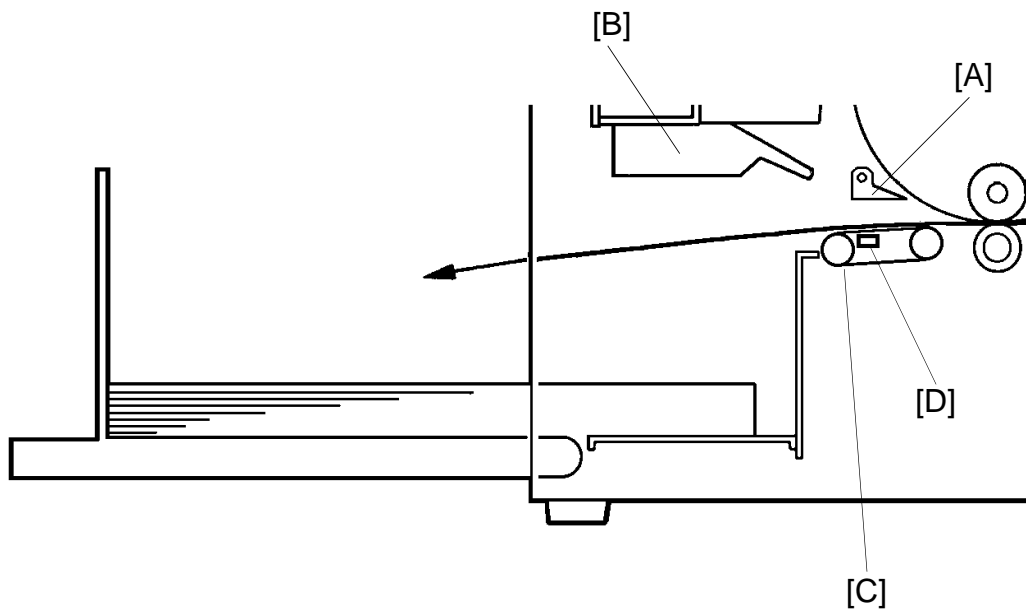
Detailed
Section
Descriptions

The paper table side fences [A] must be adjusted to match the paper size. To ensure correct paper positioning on the tray, the left and right side fences will move as a unit because of the rack and pinion [B]. When the dial [C] is turned, the side fences will move, changing the paper position on the table.

When the lever [D] is lowered and the paper table is in the no-paper feed position, the magnetic switch [E] is de-activated. In this condition, the Print Start key is disabled.

2. PAPER DELIVERY SECTION

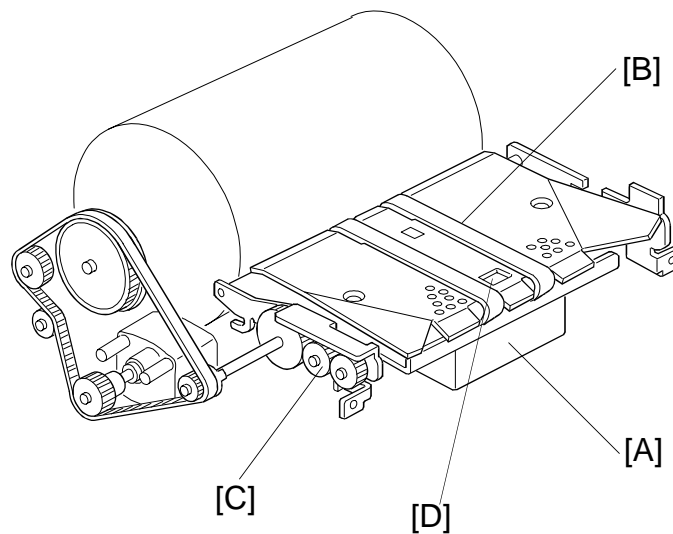
2.1 OVERALL



The exit pawl [A] and the air knife [B] are used to separate the paper from the drum. The paper is then transported to the delivery table by the transport unit [C].

The reflective photosensor [D] is used to detect paper exit jams.

2.2 VACUUM UNIT DRIVE MECHANISM



The vacuum fan [A] will hold the separated paper against the transport belts [B] to deliver the paper to the delivery table. The transport belts are driven by the main motor through gears [C].

The exit sensor (reflective photosensor) [D], located on the vacuum unit, is used to detect paper exit jams.

3. IMAGE PROCESSING

3.1 IMAGE DENSITY SETTING

The A/D conversion parameters (refer to page 2-43 of the VT1730 service manual) and thermal head energy changes depend on the image density selected on the operation panel.

The table below illustrates the relationships between the image modes, parameters, and the thermal head energy.

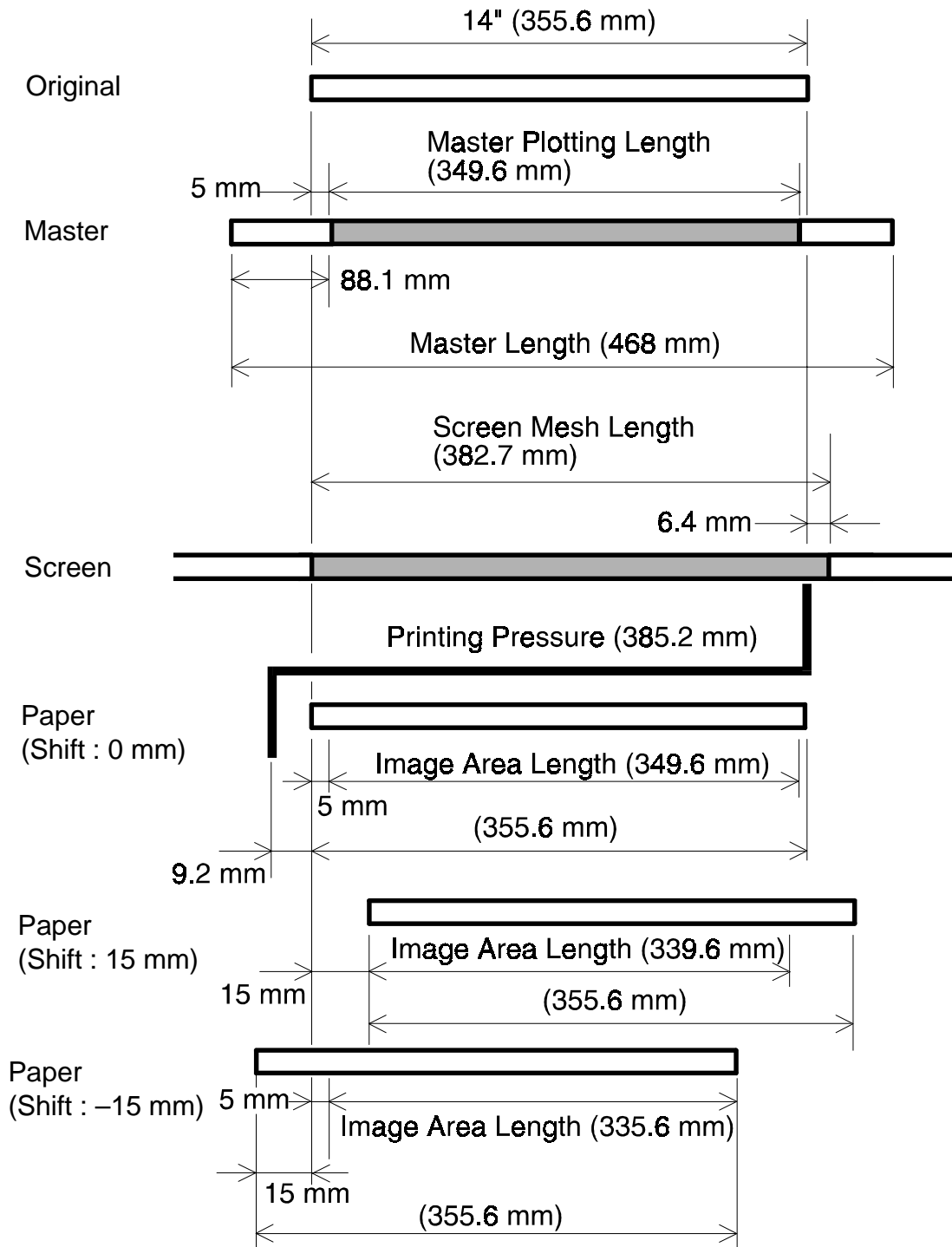
			VH (%)	M1 (%)	M2 (%)	M3 (%)	VL (%)	T/H Energy (%)
Shading Distortion Memory			100	86.5	73.0	59.5	46.0	
Image Setting	Line Mode	Lighter	74.0	57.0	40.0	23.0	6.0	100
		Normal	100	76.5	53.0	29.5	6.0	100
		Darker 1	100	79.8	59.5	39.3	19.0	100
		Darker 2	100	79.8	59.5	39.3	19.0	115
	Photo Mode	Lighter	70.0	36.6	19.6	11.4	7.0	100
		Normal	80.0	43.4	24.8	15.8	11.0	100
		Darker 1	85.0	47.9	29.0	19.9	15.0	100
		Darker 2	85.0	47.9	29.0	19.9	15.0	115

In the VT1730 model, the thermal head energy is always the same, regardless of the image density setting. Only the A/D conversion parameters are changed depending on the selected image density. Using this method, the image density of solid black areas will not change even if a darker setting is selected. This is because all of the pixel data will be the same after the binary processing, if the area is purely black.

In the VT1800, when Darker 2 is selected, the A/D conversion parameters are the same as those of Darker 1, but the thermal head energy is increased to 115% of the normal thermal head energy. (This is done by changing the pulse width.) As a result, the density of solid black areas will become darker.

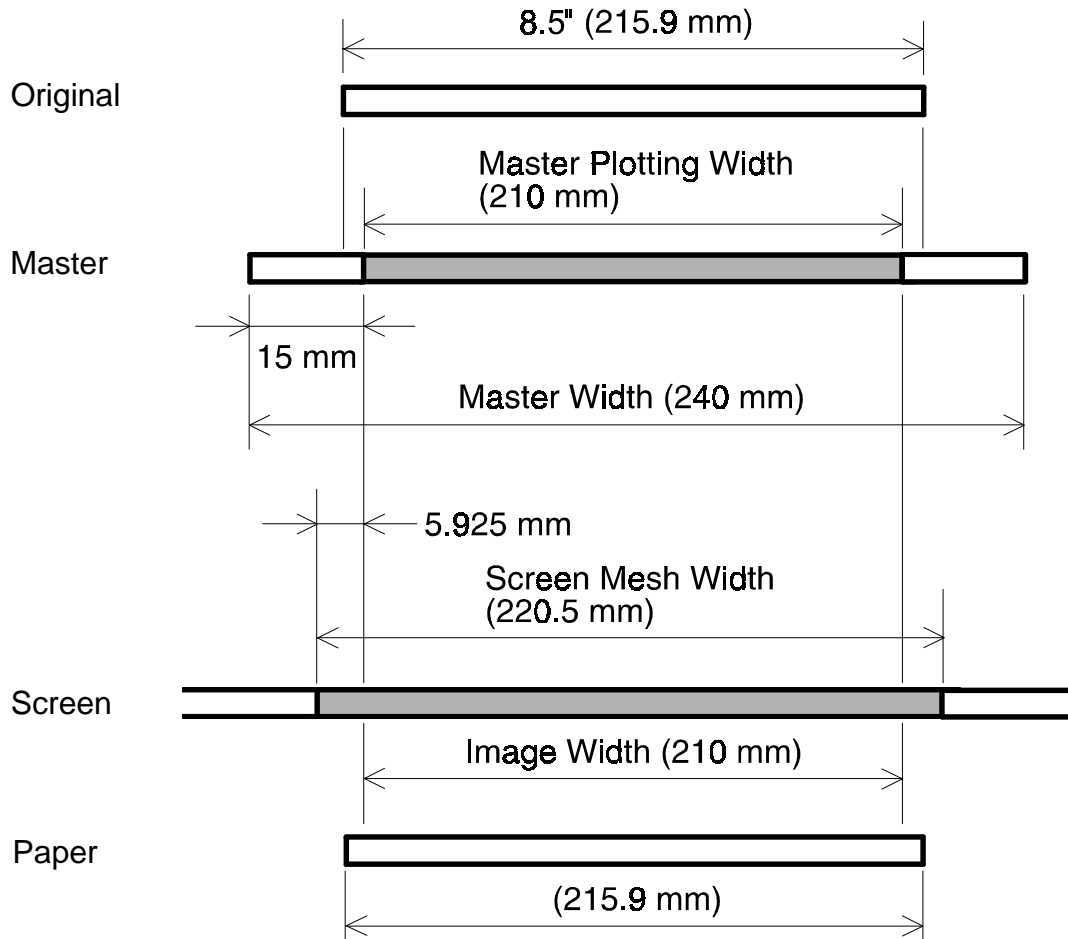
4. MASTER PLOTTING AND PRINTING AREA

1. Length (Legal Drum)



Detailed
Section
Descriptions

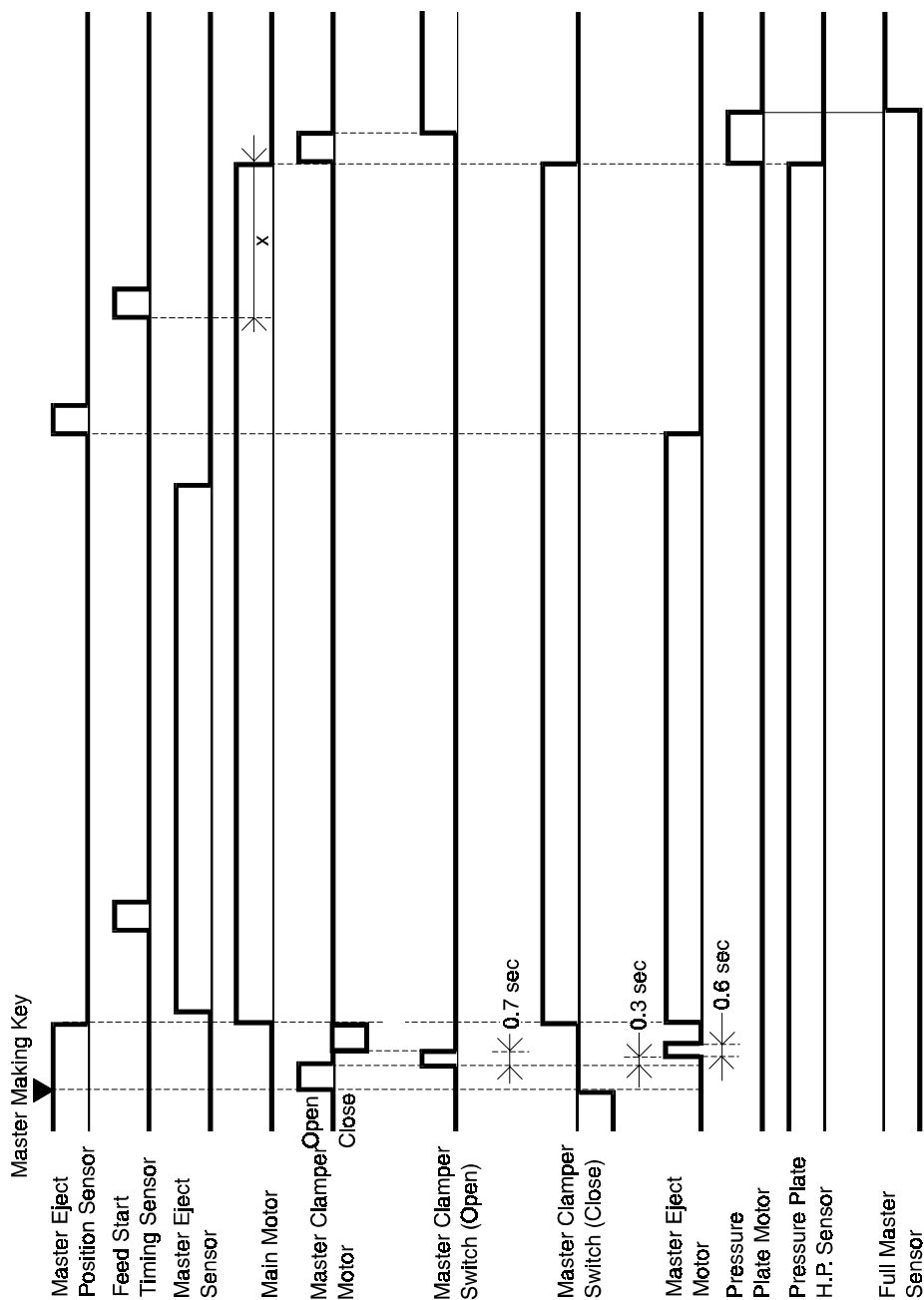
2. Width



5. TIMING CHART

TIMING CHART 3 (Master Cut/Trial Print) is identical to that of VT1730

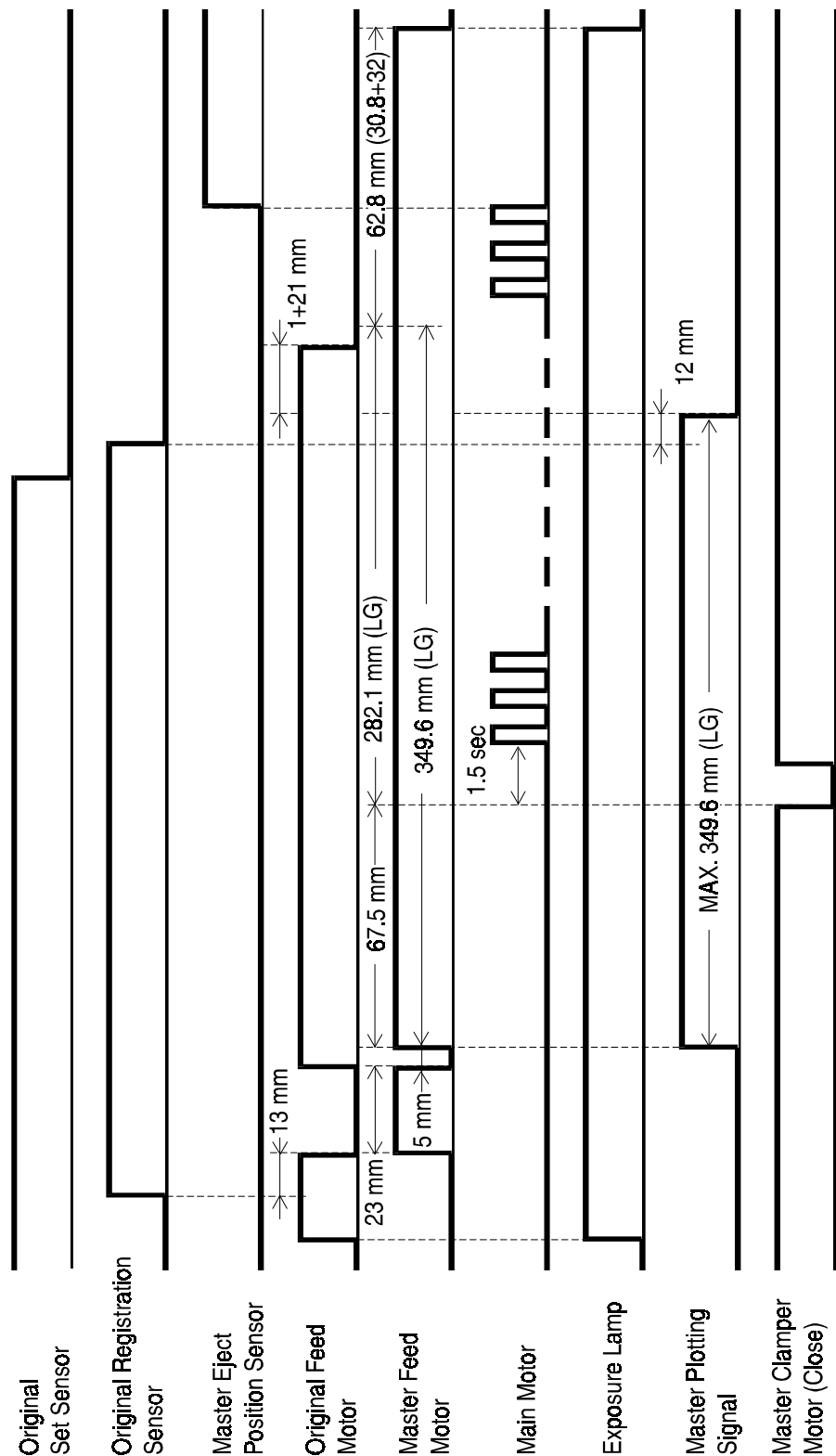
5.1 MASTER EJECT (TIMING CHART 1)



X = 64 pulses from the main motor encoder.

Detailed
Section
Descriptions

5.2 ORIGINAL FEED/PLOTTING (TIMING CHART 2)

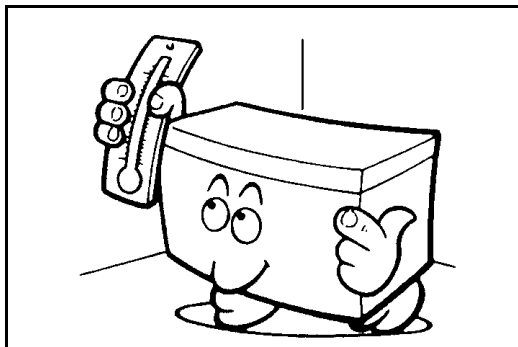


INSTALLATION

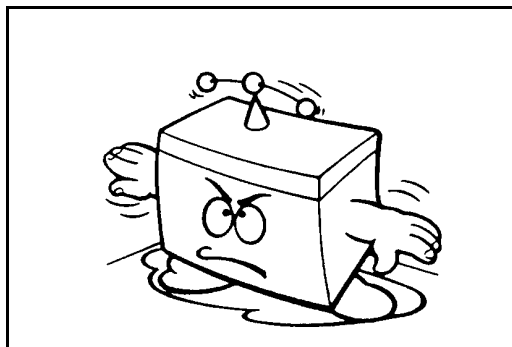
1. INSTALLATION REQUIREMENTS

The installation location should be carefully chosen because the environmental conditions greatly affect the performance of the machine.

1.1 OPTIMUM ENVIRONMENTAL CONDITIONS



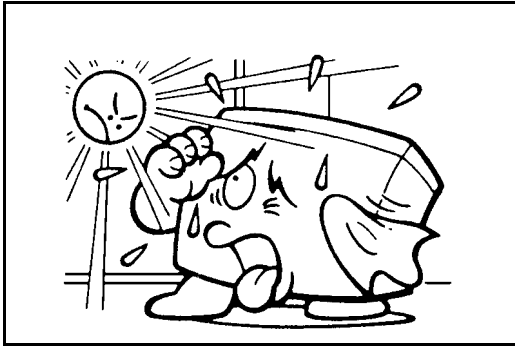
Temperature — 10 to 30°C
(50 to 86°F)
Humidity — 20 to 90 % RH



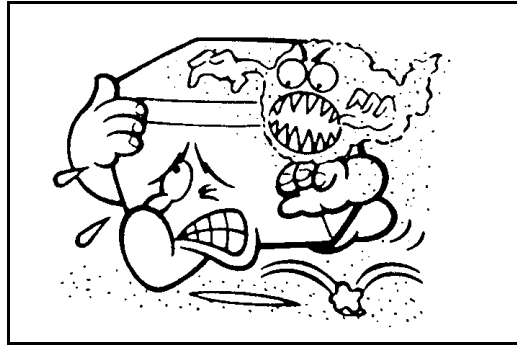
On a strong and level base.

The machine must be level within
5 mm (13/64") both front to rear
and left to right.

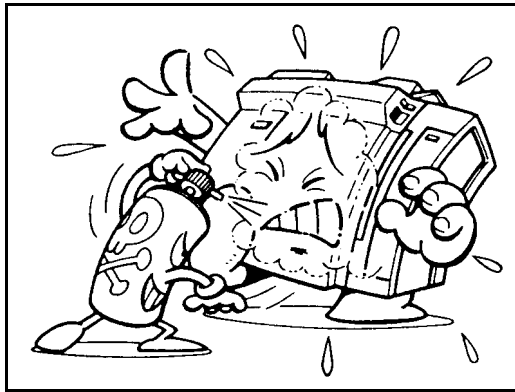
1.2 ENVIRONMENTS TO AVOID



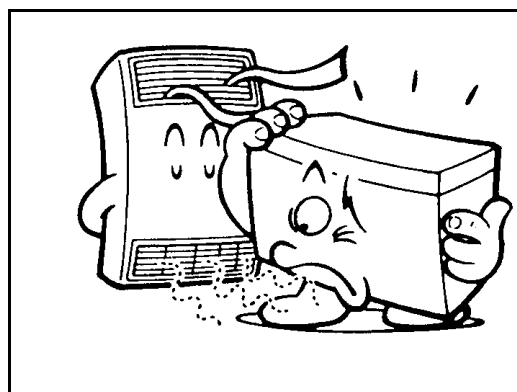
Locations exposed to direct sunlight or strong light (more than 1,500 lux).



Dusty areas.

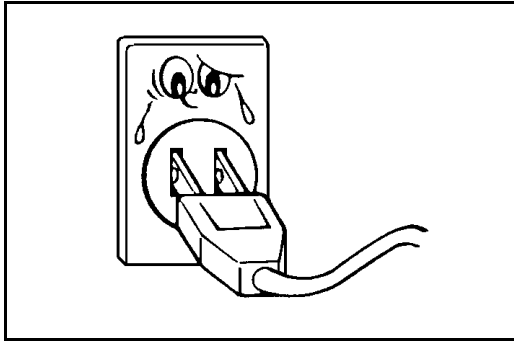


Areas with corrosive gases.

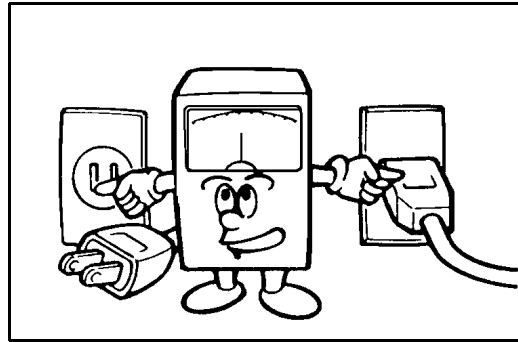


Locations directly exposed to cool air from an air conditioner or reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause condensation within the machine.)

1.3 POWER CONNECTION



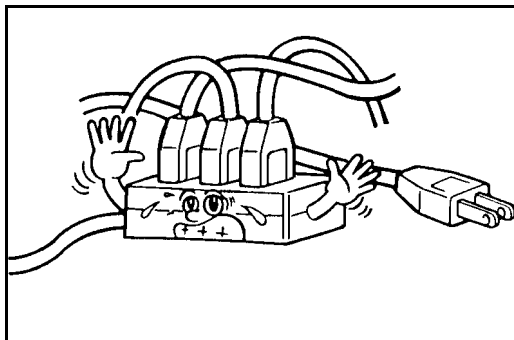
Securely connect the power cord to a power source.



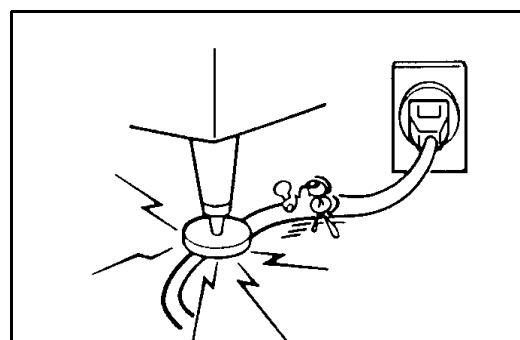
Voltage must not fluctuate more than 10%.

Ensure that the wall outlet is near the machine and easily accessible.

Ensure the plug is firmly inserted in the outlet.



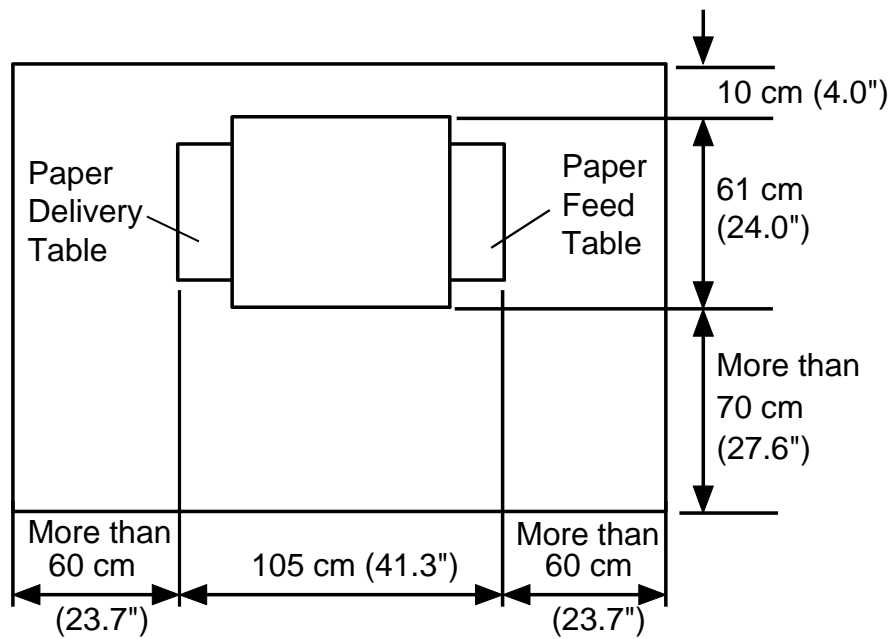
Avoid multiwiring.



Do not pinch the power cord.

1.4 MINIMUM SPACE REQUIREMENTS

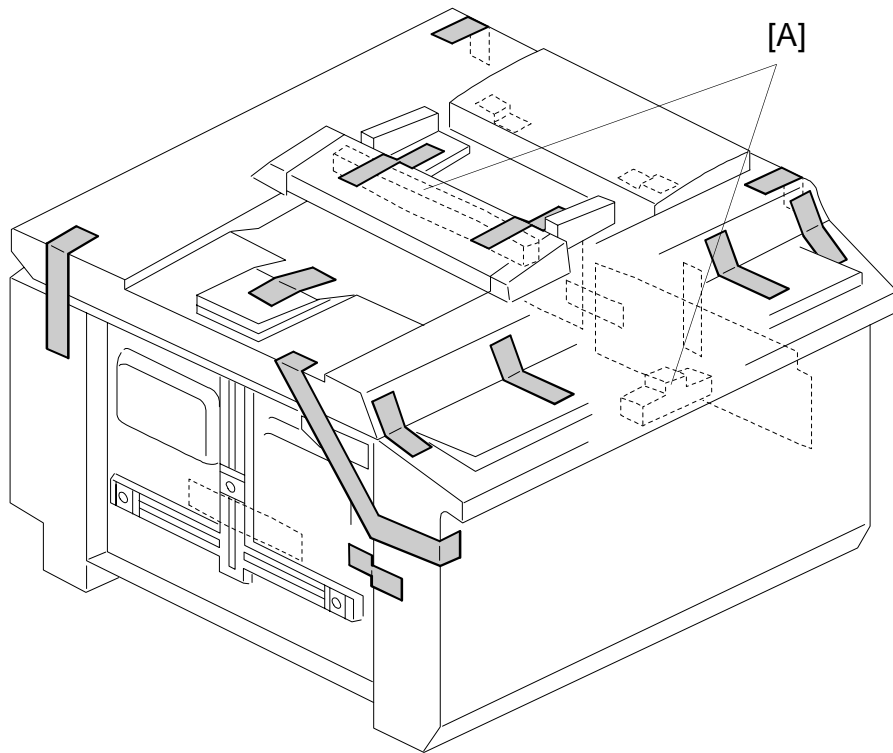
Place the machine near a power source, providing clearance as shown below.



2. INSTALLATION PROCEDURE

1. Ensure that all the accessories listed below are received.

(1) Master Spool.....	2
(2) Paper Feed Side Pad	2
(3) Operating Instructions - English.....	1
(4) NECR	1



2. Place the machine on a strong and level base.

NOTE: Use a sturdy desk, or something similar. The machine must be level within 5 mm (0.2") both front to rear and left to right.

3. Remove all of the tape and string used to secure the covers and units. Refer to the illustration above.

4. Open the paper feed tray. Remove the cushions [A] used to support the paper feed table and scanner cover.

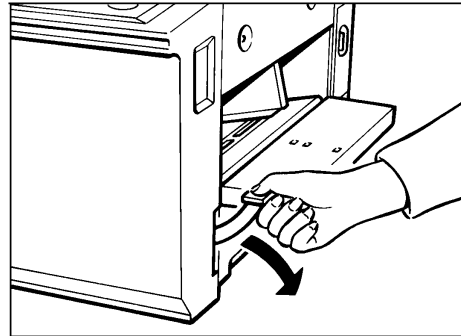
5. Firmly insert the plug in the wall outlet.

NOTE: Ensure that the wall outlet is near the machine and is easily accessible.

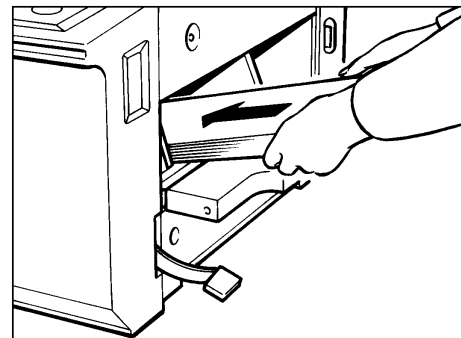
6. Turn on the main switch.

7. Load paper as follows:

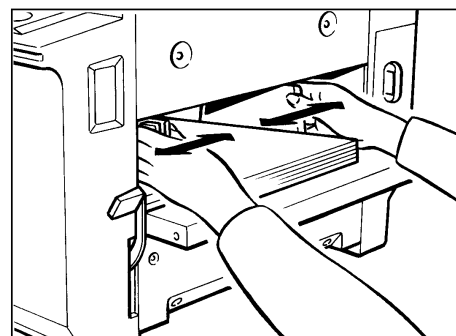
- a. Open the paper feed table.
- b. Press down the feed roller pressure lever.



- c. Place the paper on the paper feed table.



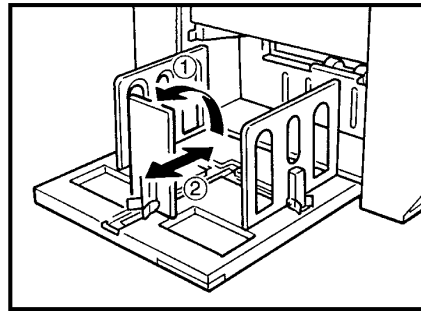
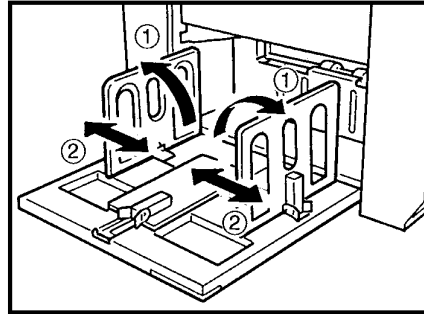
- d. Adjust the paper feed side plates to match the paper size.
- e. Lift the feed roller pressure lever.
- f. Ensure that the paper feed side plates contact the paper lightly.



8. Open the paper delivery table.

A. Move side plates to match the print paper size.

B. Move the end fence to match the print paper size.



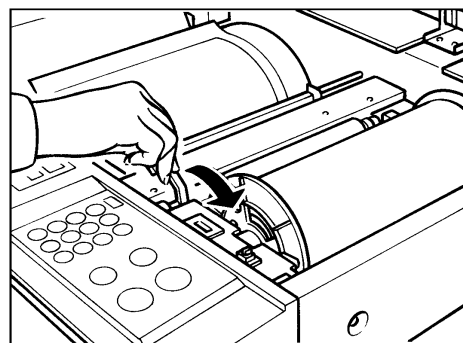
9. Install the master roll as follows:

a. Insert both spools into the new master roll.

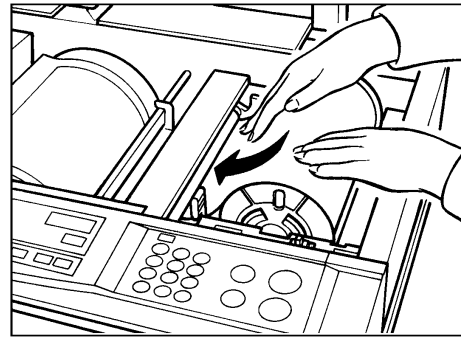
b. Open the top cover.

c. Position the master roll. (Plastic coated side down.)

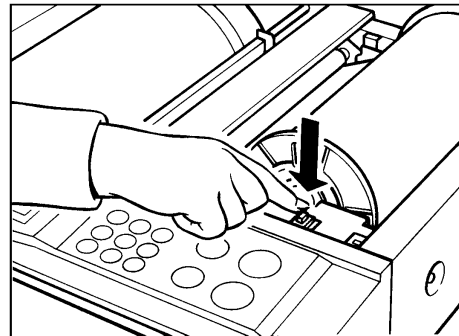
d. Lift the pressure release lever to release the platen roller pressure.



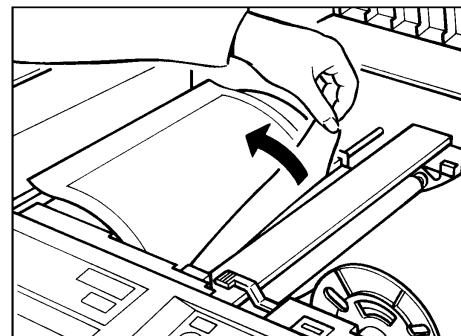
- e. Insert the leading edge of the master roll under the platen roller. Then rotate the master roll counter clockwise.
- f. Return the pressure release lever to its original position.
- g. Turn on the main switch.



- h. Press the master cut button to cut the leading edge of the master roll.

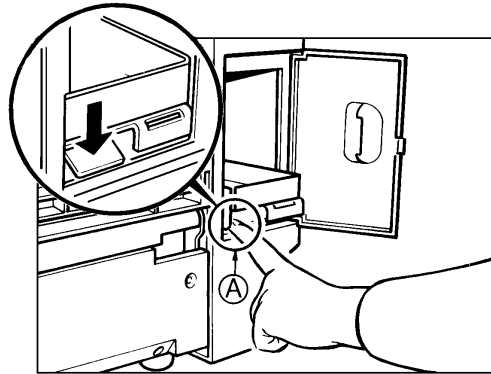


- i. Remove the cut-off portion of the master roll.
- j. Close the top cover.



10. Install the ink cartridge as follows:

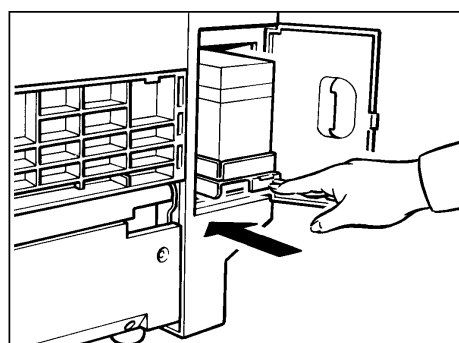
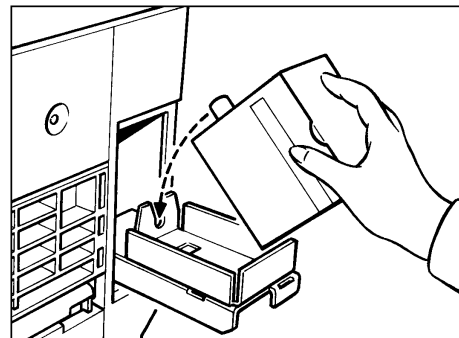
- a. Open the ink cover.
- b. Press down the release lever (green tab [A]). Then pull out the ink cartridge holder.
- c. Remove the ink cap and install the ink cartridge as shown in the illustration.
- d. Slide in the ink cartridge holder. Then press the setting lever (green tab), [B] until it clicks into position.



- e. Close the ink cover.

11. Make some test prints as follows:

- a. Adjust the original guides to match the original size.
- b. Place an original face down into the ADF.
- c. Input the desired number of prints using the number keys and press the Master Making key.
- d. After one sheet of paper is delivered, select the lowest print speed (70cpm) and press the Print Start key to make prints at the lowest print speed until the print image density stabilizes. Use a test chart to check the image density.
- e. Check the copy image after the image is stabilized (dry.)



SERVICE TABLES

1. MAINTENANCE TABLE

The following items should be maintained periodically. There are two sets of intervals - one based on time and the other based on the print count. For maintenance items with entries in both columns, use whichever occurs first.

C: Clean R: Replace L: Lubricate A: Adjust

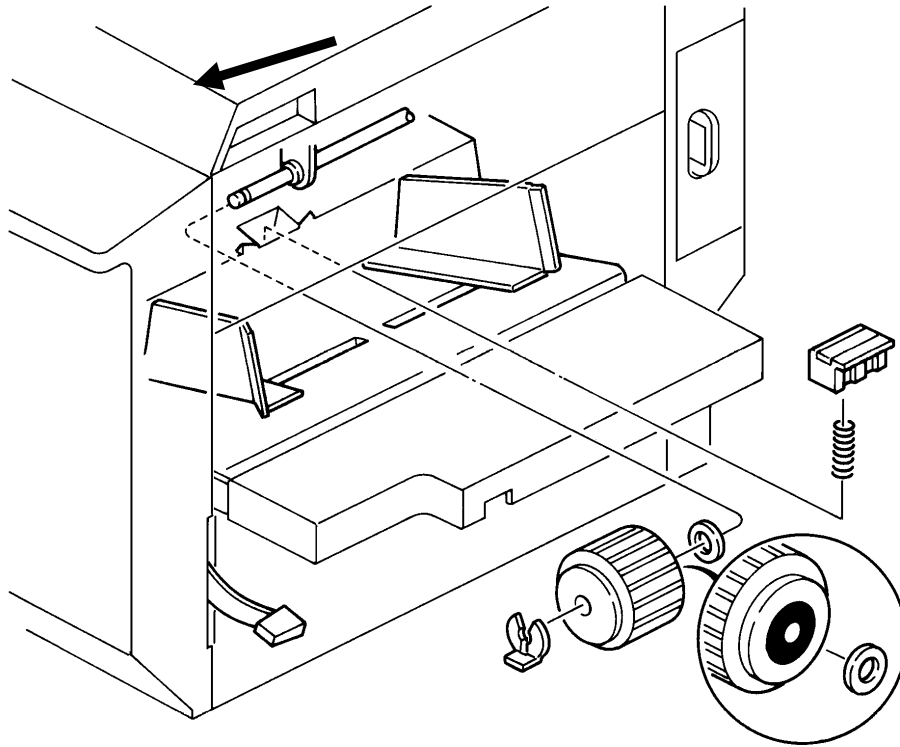
Item	Interval	Time				Print Counter					EM	NOTE
		6M	1Y	2Y	3Y	300K	600K	1M	1.2M	2M		
Scanner/Optics												
Exposure Lamp			C	C	C							Dry Cloth
Original Pick-up Roller					R							
Mirror/Reflector			C	C	C							Soft Cloth
Exposure Glass			C	C	C							Dry Cloth
Original Registration Sensor			C	C	C							Dry Cloth
Original Friction Pad			R	R	R							
Master Feed												
Platen Roller			R	R	R							Expected life is 6K masters.
Master Eject Rollers			C	C	C							Alcohol
Drum Master Sensor											C	Dry Cloth
Paper Feed												
Paper Feed Roller		R	R	R	R	R	R	R	R	R		
Friction Pad		C	C	C	C		R		R			Damp Cloth
Press Roller				R					R			
Paper Feed Roller One-way Clutch								R		R		
Paper Feed Clutch										R		
Feed Roller Bushing			L	L	L							Motor Oil (SAE #20)
Feed Roller Drive Gears			L	L	L							Grease (Albania #2)
Registration/Exit Sensors		C	C	C	C							Dry Cloth
2nd Feed Roller		C	C	C	C							Dry Cloth
Transport Unit Drive Gear Bearing			L	L	L							Motor Oil (SAE #20)
Transport Unit Gears			L	L	L							Grease (Albania #2)
Drum and Ink Supply												
Cloth Screen				R					R			
Drum Drive Gears and Cam			L	L	L							Grease (Albania #2)
Drum Flange Bushing			L	L	L							Motor Oil (SAE #20)
Inside/Outside of the Drum			C	C	C							Alcohol
Ink Pump Nozzle			C	C	C							Alcohol

Item \ Interval	Time				Print Counter					EM	NOTE
	6M	1Y	2Y	3Y	300K	600K	1M	1.2M	2M		
Others											
Timing Belt Tension			A								
Press Roller Lock Lever Position			A								

2. LUBRICATION POINTS

2.1 FEED ROLLER BUSHINGS

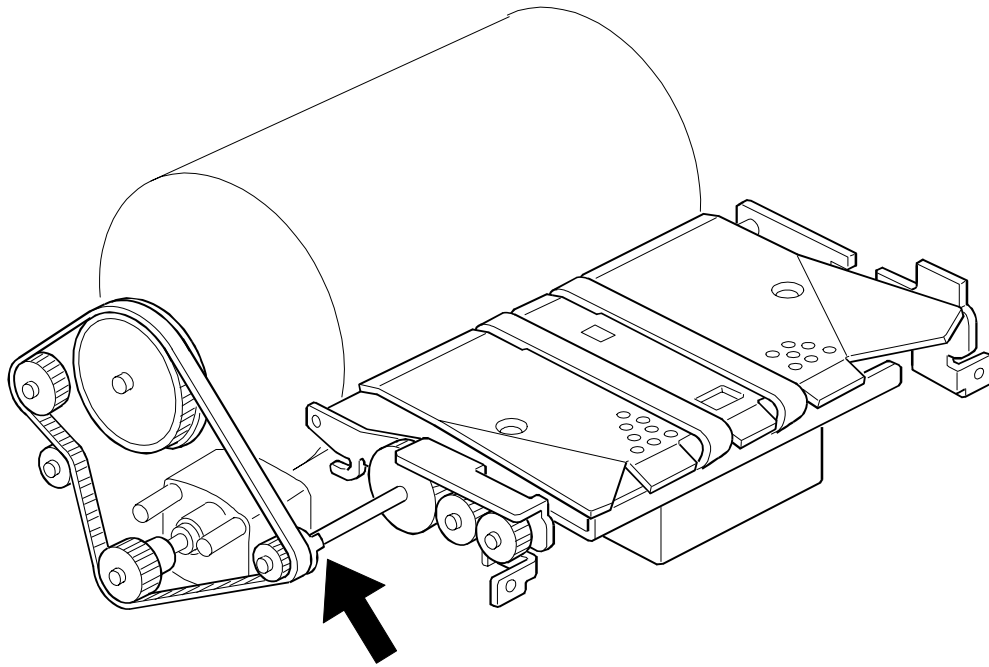
Lubricant: Motor Oil (SAE 30)



Service Tables

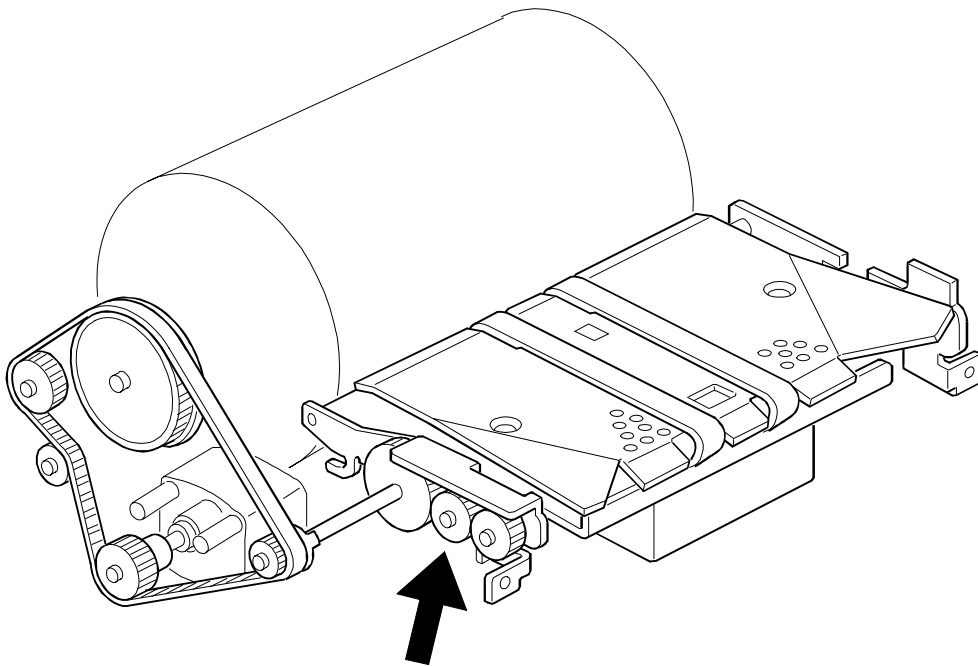
2.2 TRANSPORT UNIT DRIVE GEAR BEARING

Lubricant: Motor Oil (SAE 30)



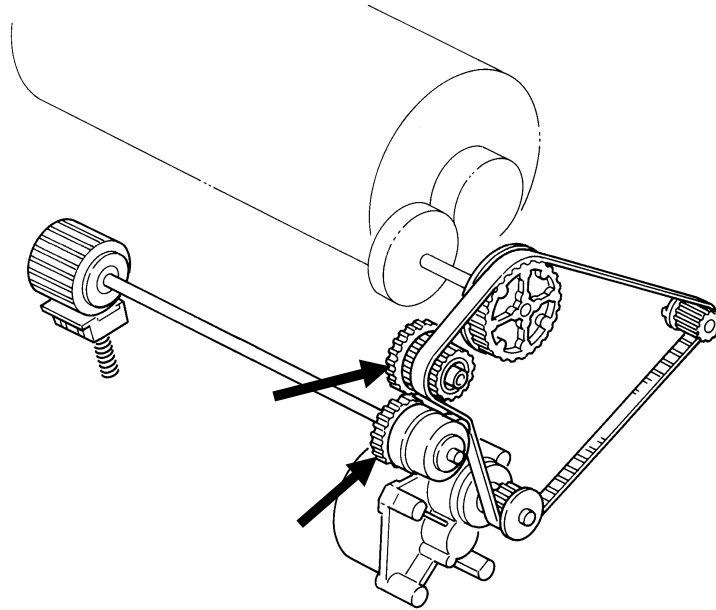
2.3 TRANSPORT UNIT GEARS

Lubricant: Grease (Albania #2)



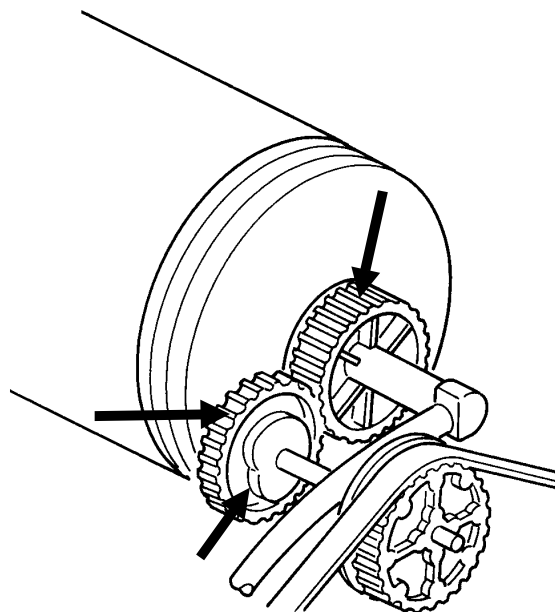
2.4 FEED ROLLER DRIVE GEARS

Lubricant: Grease (Albania #2)



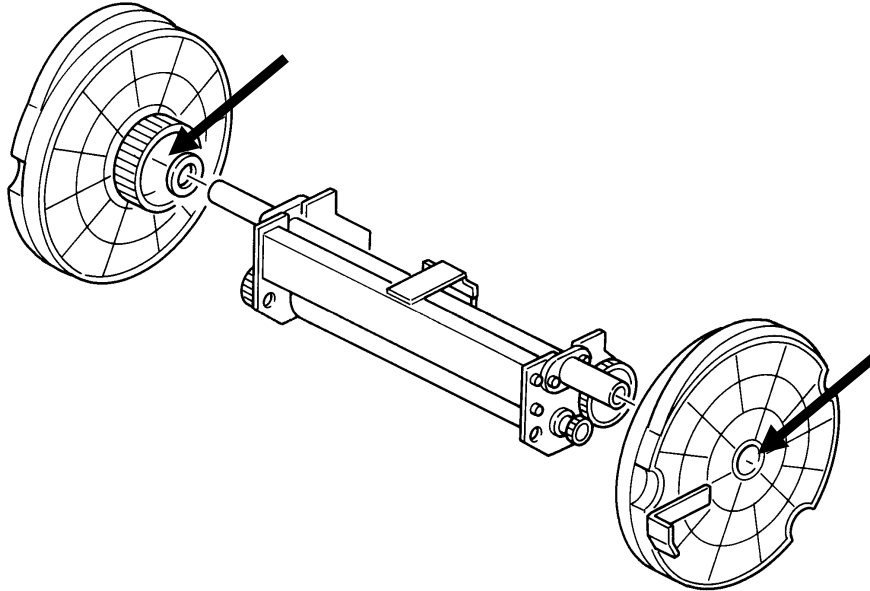
2.5 DRUM DRIVE GEARS AND CAM

Lubricant: Grease (Albania #2)



2.6 DRUM FLANGE BUSHING

Lubricant: Motor Oil (SAE 30)



3. SPECIAL OPERATION MODES

3.1 SKIP FEED MODE

The operator can select the number of rotations of the drum between each print cycle by the following procedure. The image will be darker and ink consumption will be increased.

- Hold down the Clear key and Stop key and select the number of rotations of the drum before the sheet of paper is fed, use the Number keys (1 to 9).

To cancel the skip feed mode, perform any of the procedures listed below.

- Hold down the Clear key and Stop key, press the digit one key.
- Hold down the Reset key and press the Clear key.
- Turn the main switch off and on.

3.2 ECONOMY MODE

The operator can select the economy mode by the procedure listed below. If the economy mode is selected, the thermal head energy (pulse width) will be reduced by 15%. The image will be lighter and ink consumption will be reduced.



- Hold down the Clear key and Image Density key and press the Image Mode key.

To cancel the skip feed mode, perform either of the procedures listed below.

- Hold down the Reset key and press the Clear key.
- Turn the main switch off and on.

3.3 QUALITY START MODE

The quality start mode will increase the image density of the 1st printed copy after the proof. Normally, the first print after the proof print is made at the selected copy speed (70, 100 or 130 rpm). If the Quality Start mode is selected. The first print is made at a slower speed (30 RPM). To select the quality start feature, perform the procedure listed below.

- Hold down the Clear key, press the  and  keys.

To cancel the skip feed mode, perform either of the procedures listed below.

- Hold down the Reset key and press the Clear key.
- Turn the main switch off and on.

4. INPUT/OUTPUT CHECK MODE

The electrical components of the machine can be checked with this service program. The input check mode will check the sensors and switches. The output check mode will allow the technician to manually activate the electrical devices, such as motors and solenoids.

4.1 ACCESS PROCEDURE

1. Turn on the main switch while holding down the Print Start, Stop, and Clear keys.
2. The memory indicator will display "01", which indicates that the Input Check mode is selected.
3. To select the Output Check mode, press the Memory/Class key. The memory indicator will display "00".

4.2 DRUM FREE RUN MODE

1. Select either the Input or Output Check mode.
2. Select the Photo mode by pressing the Image Mode key.
3. To start the drum free run mode, press the Image Density key. The drum rotation speed will depend on the Image Density selection. Refer to the chart below.

Image Density Selection	Drum Speed
Lighter	30 rpm
Normal	Stop
Darker	30 rpm
Darkest	70/100/130 rpm (see Note)

NOTE: The drum speed can be changed by pressing the Speed key.

4.3 INPUT CHECK MODE

By entering a number listed below, the input level of each electrical device can be checked. Depending on the device's condition, the beeper will sound and the machine status indicators will light.


No.	Device	Conditions when the beeper will sound
1	Feed Start Timing Sensor	The sensor is actuated
2	Feed Jam Timing Sensor	The sensor is actuated
3	Exit Jam Timing Sensor	The sensor is actuated
4	Master Eject Position Sensor	The sensor is actuated
5	Drum Master Sensor	The sensor detects a master on the drum
6	Cover Safety	The scanner unit is open
7	Master End Sensor	The sensor detects no master
8	Master Cut Switch	The switch is pressed
9	Right Cutter Switch	The switch is actuated
10	Left Cutter Switch	The switch is actuated
11	Paper End Sensor	The sensor detects no paper
12	Registration Sensor	The sensor detects paper
13	Exit Sensor	The sensor detects paper
14	Master Clamper Switch (Open)	The clamper is open
15	Master Clamper Switch (Close)	The clamper is closed
16	Original Set Sensor	The sensor detects an original
17	Original Registration Sensor	The sensor detects an original
18	ADF Open Switch	The ADF is closed
19	Master Eject Sensor	The sensor is actuated
20	Pressure Plate H.P. Sensor	The sensor is actuated
21	Full Master Sensor	The sensor is actuated
22	Paper Table Set Switch	The switch is on
23	DIP SW 103-1	The switch is on
24	DIP SW 103-2	The switch is on
25	DIP SW 103-3	The switch is on
26	DIP SW 103-4	The switch is on
27	DIP SW 103-5	The switch is on
28	DIP SW 103-6	The switch is on
29	DIP SW 103-7	The switch is on
30	DIP SW 103-8	The switch is on

4.4 OUTPUT CHECK MODE

You can individually turn on each of the electrical device listed below . The procedure is as follows:

1. Select the output check mode. Refer to page 4-8.
2. Enter the number of the device to be tested.
3. Press the Print key to turn on the device.
4. To turn off the device, press the Clear key.

NOTE: Several of the are devices are only turned on for the duration that the Print key is pressed (marked with *).

 CAUTION:
1. Do not manually turn the drum or use the output modes (NO. 10 or 11) when the clamber is opened with the output mode.
2. Do not open the clamber when the drum is not at either the master feed or eject drum stop positions. Use the drum stop functions (No. 15 or 16) before opening the clamber.

No.	Device/Function	Note
1	Thermal Head	Power is applied to the thermal head for 30 seconds after the Print key is pressed. While the power is applied to the thermal head, the beeper sounds.
2	Paper Feed Clutch *	
3	Pressure Release Solenoid *	
4	Master Eject Motor *	
5	Ink Supply Motor *	
6	Master Cutter Motor	The motor will stop when either of the cutter switches is activated.
7	Print Counter	The counter is increased by one each time the Print key is pressed.
8	Master Counter	The counter is increased by one each time the Print key is pressed.
9	Exposure Lamp	
10	Master Clamber Motor (Open) *	The motor will stop when the master clamber switch detects the clamber open condition.
11	Master Clamber Motor (Close) *	The motor will stop when the master clamber switch detects the clamber closed condition.
12	Master Feed Motor	
13	Original Feed Motor	
14	Shading Distortion Correction	The shading distortion memory is rewritten.
15	Drum Stop (Master Exit)	The drum will rotate and stop at the master eject position.
16	Drum Stop (Master Feed)	The drum will rotate and stop at the master feed position.
17	Pressure Plate Motor * (To Home Position)	The motor will move the pressure plate towards to the home position. The motor will stop when the pressure plate H.P. sensor is actuated.

No.	Device/Function	Note
18	Pressure Plate Motor * (To the Compression Position)	The motor will move the pressure plate towards to the master compression position. The motor will stop when the full master box sensor is actuated.
19	Air Knife Motor *	
20	Vacuum Motor	
21	Operation Panel Indicators	Turns on all of the indicators on the operation panel.

5. SERVICE TABLES

5.1 TEST POINT TABLE

Main PCB

No	Usage
TP101	−12 V
TP102	Ink Level (Standard Pulse)
TP103	Ink Level (Detection Pulse)
TP104	GND−b
TP105	+12 V
TP106	+24 V
TP107	4MHz Clock
TP108	+38 V
TP109	+5 V
TP110	GND−a
TP111	Original Registration Sensor

A/D Conversion PCB

No	Usage
TP201	OS Signal (CCD Output)
TP202	VS Signal (Inverted and Amplified CCD Output)
TP203	GND
TP204	Scan Line Trigger

5.2 VARIABLE RESISTOR TABLE

Main PCB

No	Usage
VR101	Ink Detection Adjustment
VR102	Original Registration Sensor Adjustment

A/D Conversion PCB

No	Usage
VR201	White Level Adjustment

Power Supply PCB

No	Usage
VR301	Factory Use Only (+5V Adjustment)
VR401	Thermal Head Voltage Adjustment

5.3 DIP SWITCH TABLE

Main PCB

DPS 101	OFF	ON
1	Outputs a Test Pattern	-
2	Dither Matrix (Screw Pattern)	-
3	Dither Matrix (Bayer Pattern)	-
4	Dither Matrix (8 x 8 Pattern)	-
5	Dither Matrix (6 x 6 Pattern)	Dither Matrix (4 x 4 Pattern)
6	Normal	Edge Emphasis in Photo Mode
7	Normal	Enable Data Noise Filter
8	Production Use Only	Must be ON

Factory Setting of DPS 101

Bit	
1	ON
2	ON
3	ON
4	ON

Bit	
5	ON
6	OFF
7	OFF
8	ON

If more than two bits of the dip switch DPS 101 are in the OFF position, an image will not be produced.

DPS 102	
1	Not Used

DPS 102			
2	3	4	Leading Edge Registration Adjustment
OFF	OFF	OFF	+2.4 mm
OFF	OFF	ON	+1.6
OFF	ON	OFF	+0.8
OFF	ON	ON	0 (Factory Setting)
ON	ON	ON	-0.8
ON	ON	OFF	-1.6
ON	OFF	ON	-2.4
ON	OFF	OFF	-3.2

DPS 103			
1	2	3	Vertical Magnification
OFF	OFF	OFF	+1.75%
OFF	OFF	ON	+1.25
OFF	ON	OFF	+0.75
OFF	ON	ON	0 (Factory Setting)
ON	OFF	OFF	-0.75
ON	OFF	ON	-1.25
ON	ON	OFF	-1.75
ON	ON	ON	-2.25

DPS103		Description
4	5	Trailing Edge Erase Margin Adjustment
OFF	OFF	+1mm
OFF	ON	+2 mm
ON	OFF	+3 mm
ON	ON	-1mm

DPS 103	OFF	ON
6	Normal	Enable Key Counter Operation
7	LG version	A4 version
8	Normal	Print and master counters do not change.

5.4 LED TABLE

Main PCB

LED #	OFF	ON
101	Insufficient Ink	Sufficient Ink
102	–	During Paper Feed

5.5 FUSE TABLE

Main PCB

FUSE #	Rated Current	Protect	
		Voltage	Device
101	630 mA	24 V	Master Cutter, Master Clamper, and Pressure Plate Motors
102	4 A	38 V	Air Knife Motor

TECHNICAL SERVICE BULLETINS

BULLETIN NUMBER: VT1730-001
APPLICABLE MODEL: VT1730

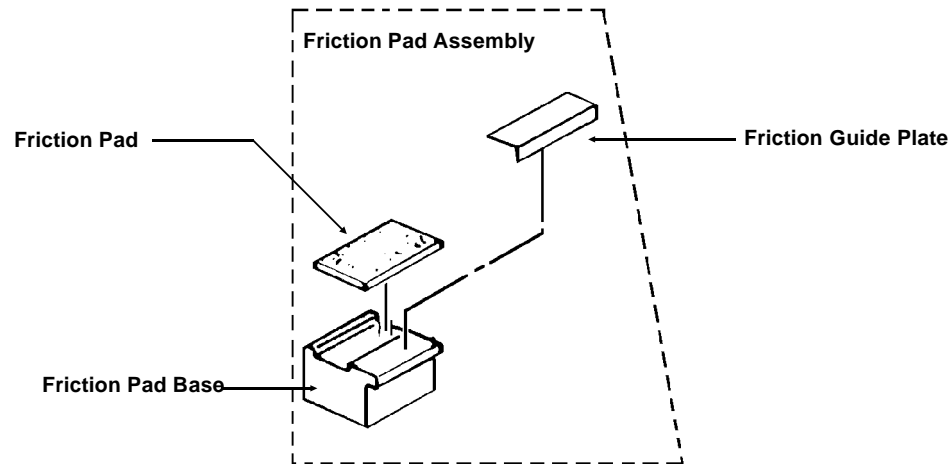
9/15/93

SUBJECT: PARTS CATALOG UPDATE

GENERAL:

The following Parts Updates are being issued to update all Ricoh VT1730 Parts Catalogs. This information should be incorporated into all existing Ricoh VT1730 Parts Catalog documentation.

- **UPDATE NO. 1 - FRICTION PAD** - To facilitate servicing, the friction guide plate has been added to the friction pad assembly. The assembly now consists of the friction pad, the friction pad base and the friction guide plate. Also, the friction pad base is no longer available as a service part.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2175080	C2175090	Friction Pad Assembly	1 → 1	1	13	36
C2175088		Friction Pad Base	1 → 0		13	23

UNITS AFFECTED:

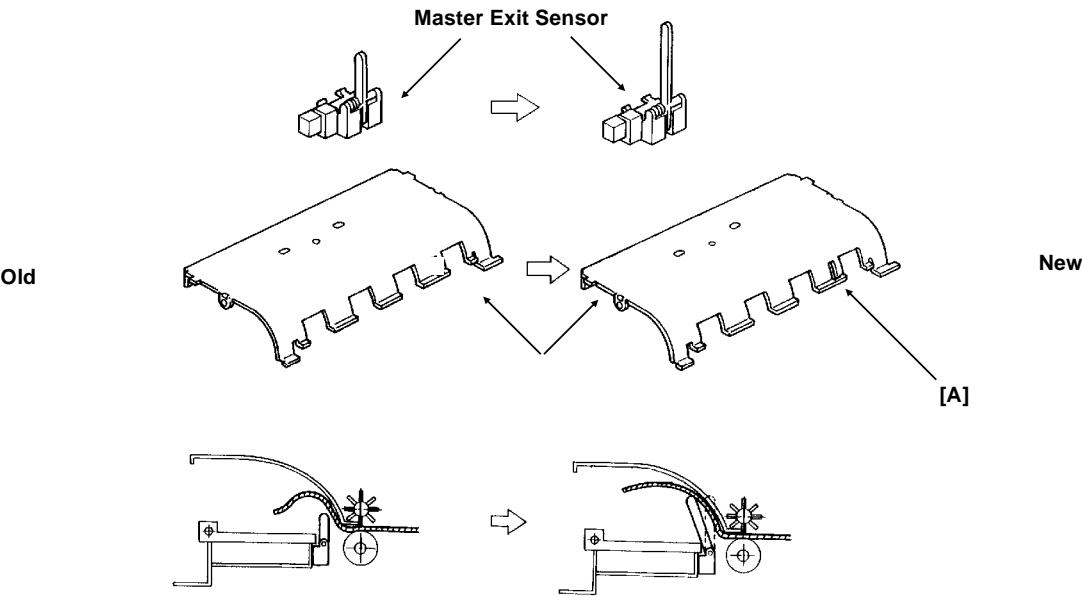
All VT1730 priports manufactured after Serial Number C3223030001 will have the new style friction pad assembly installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

- **UPDATE NO. 2** - MASTER EJECT SENSOR - To insure that the master eject sensor does not fail to detect a properly transported master, a cutout [A] has been added to the eject unit guide plate and the length of the sensor actuator has been increased as shown below.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2173561	C2173565	Guide Plate - Eject Unit	1 → 1	3/S	25	3
C2178445	C2178446	Photointerruptor - Master Eject	1 → 0	3/S	25	14

UNITS AFFECTED:

All VT1730 priports manufactured after Serial Number C3223030001 will have the new style master ejēc sensor and eject unit guide plate installed during production.

BULLETIN NUMBER: VT1730-002
APPLICABLE MODEL: VT1730

10/20/93

SUBJECT: FIELD SERVICE MANUAL - INSERT

GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 2 sets of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow.⇒

- 2-28 Additional Information
- 4-2 Additional Information
- 4-11 Additional Information
- 5-31 Additional Information

BULLETIN NUMBER: VT1730-003
APPLICABLE MODEL: VT1730

10/20/93

SUBJECT: ANTISTATIC BRUSH

SYMPTOM:

Master feed jams.

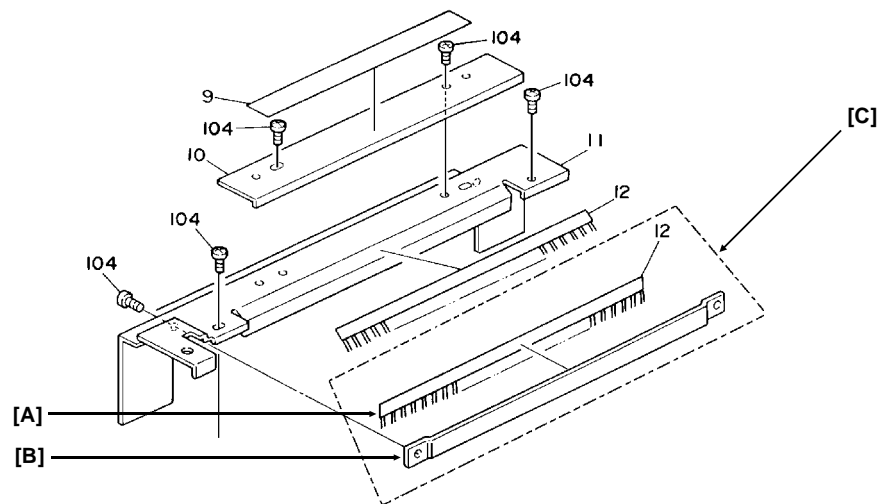
CAUSE:

The Antistatic Brush [A] interferes with master transportation.

SOLUTION:

In the field it is difficult to correctly position the Antistatic Brush [A] on the Inner Cover [B] the two parts have been combined into the Antistatic Brush Assembly [C]. The Antistatic Brush Assembly has been registered as a service part in place of the Inner Cover.

NOTE: *The position of the brush in the Antistatic Brush Assembly has been raised slightly. Even if the antistatic brush does not contact the master surface, it will still remove electrostatic charges on the master.*



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2174068		Inner Cover	1 → 0		17	13
	C2174064	Antistatic Brush Assembly	0 → 1	1	17	13

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223060020 will have the new Antistatic Brush Assembly installed during production.

BULLETIN NUMBER: VT1730-004
APPLICABLE MODEL: VT1730

10/20/93

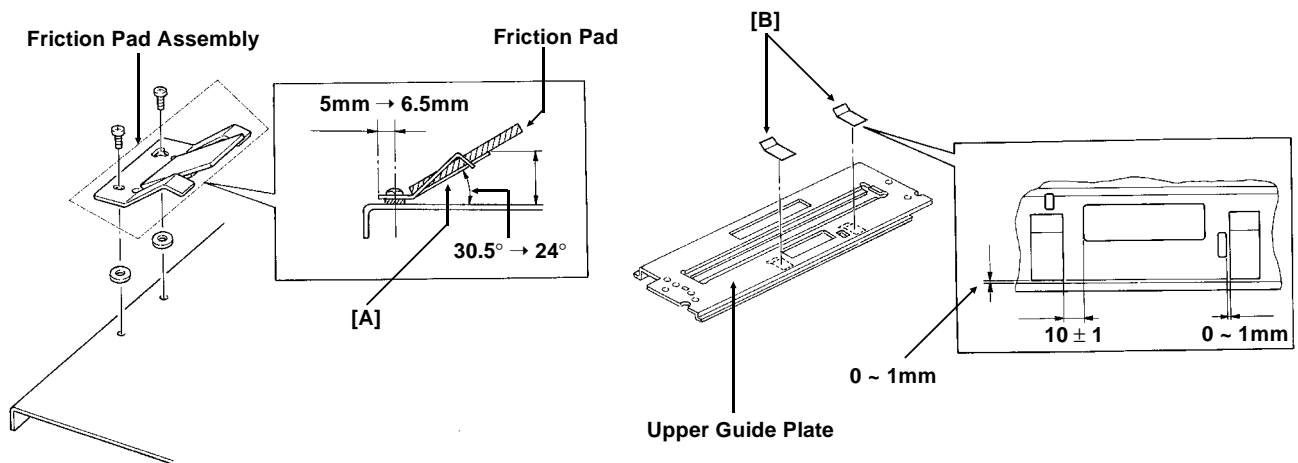
SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following VT1730 parts updates should be incorporated into all existing VT1730 Parts Catalog documentation.

● **UPDATE NO. 1 - ADF FRICTION PAD** - The following modifications will ensure smooth original feed while preventing stream feeding of the 1st and 2nd originals:

1. The angle of the separation spring plate [A] has been changed from 30.5 to 24°. Also, the position of the spring plate has been shifted to the left by changing the screw hole positions.
2. Original Guide Mylars [B] have been installed on the upper guide plate to ensure the original registration sensor can detect the gap between the trail edge of the 1st original and the lead edge of the 2nd original.



NOTE: To facilitate service, the ADF friction pad assembly (which includes the ADF friction pad) has been registered as a service part in place of the separation spring plate [A].

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

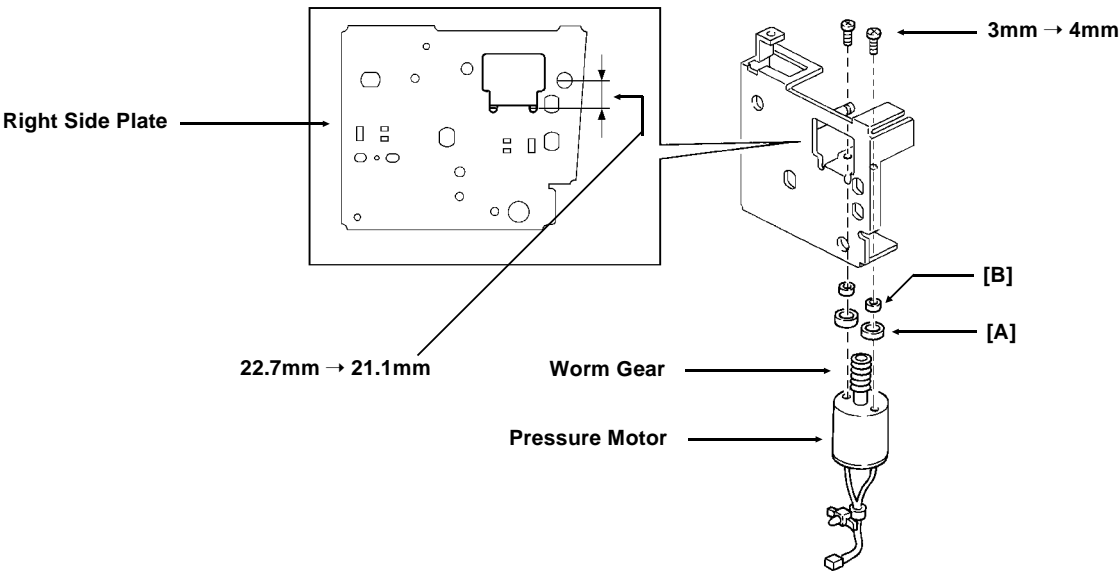
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2173014		Separation Spring Plate	1 → 0		9	5
	C2173027	ADF Friction Pad Assembly	0 → 1	1	9	5
	C2173068	Original Guide Mylar - 33 x 15	0 → 1		9	19 *

* DENOTES NEW ITEM

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223060001 will have the style ADF Friction Pad Assembly and Original Guide Mylars installed during production.

- **UPDATE NO. 2 -** EJECT UNIT RIGHT SIDE PLATE - To reduce noise from the master eject motor, two insulators [A] and two bushings [B] have been inserted between the pressure motor and the right side plate as illustrated below. Due to this modification, the two screws fixing the motor have been changed from 3mm to 4mm. Also, to maintain the correct position between the pressure plate gear and the worm gear, the configuration of the right side plate has been changed.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2173511	C2173516	Right Side Plate - Eject Unit	1 → 1	3/S	25	26
	C2173591	Insulator	0 → 2	3/S	25	29 *
	07073016B	Bushing - 3 x 1.6	0 → 2	3/S	25	111 *
08011135		Philips Pan Head Screw-M3 x 3	n → n-2	3/S	25	107
	03130040W	Philips Pan Head Screw-M3 x 4	n → n+2	3/S	25	110

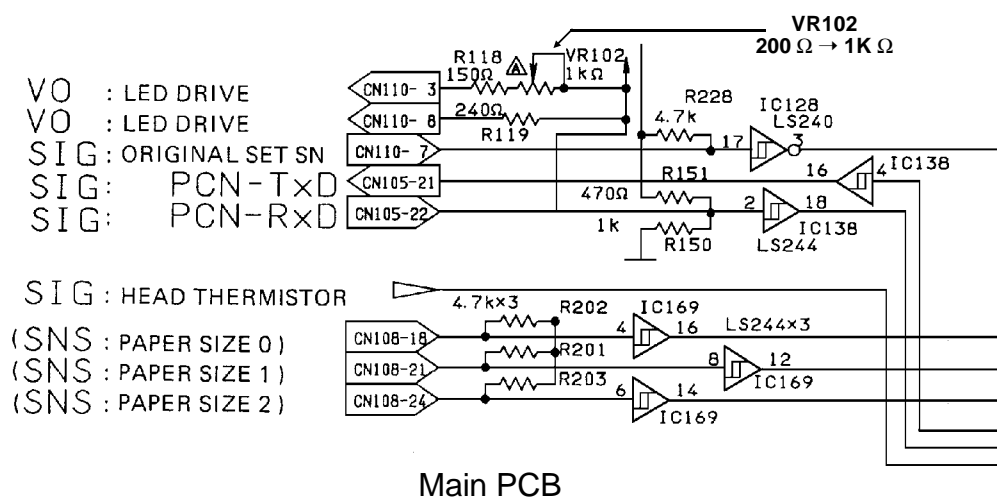
* DENOTES NEW ITEM

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223050001 will have the noise reduction modifications installed during production.

UPDATE NO. 3 -

MAIN PCB - To extend the range of the original registration sensor adjustment a variable resistor on the main board has been changed from 200Ω to 1K Ω. The part number for the main PCB (C2178002) remains the same.

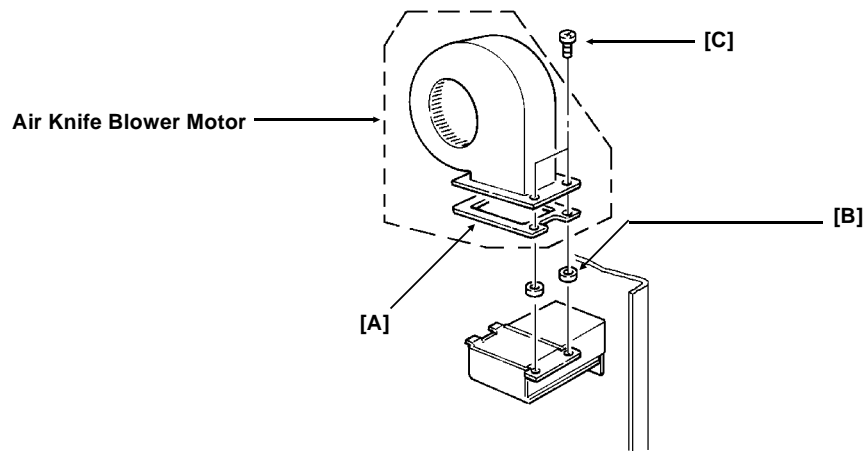


				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QUANTITY	PAGE	ITEM
16018185		Resistor - 200 Ω 0.5W	1 → 0	43	212
	16018137	Variable Resistor - 1KΩ	0 → 1	43	212

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223030001 will have the modified Main PCB installed during production.

- **UPDATE NO. 4 -** AIR KNIFE MOTOR - To reduce noise, a rubber base [A] and two bushings [B] have been added to the air knife motor. Due to this modification, the two screws [C] fixing the motor have been changed from 6mm to 8mm.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2178425	C2178424	Blower - DC 38V 20W	1 → 1	3/S	33	2
	07074025	Bushing - 4 x 2.5	0 → 2	3/S	33	109 *
09513006W		Philips Screw with Flat Washer M3 x 6	n → n-2	3/S	33	106
	09513008W	Philips Screw with Flat Washer M3 x 8	0 → 2	3/S	33	110 *

* DENOTES NEW ITEM

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223060001 will have the Air Knife Motor noise reduction modifications implemented during production.

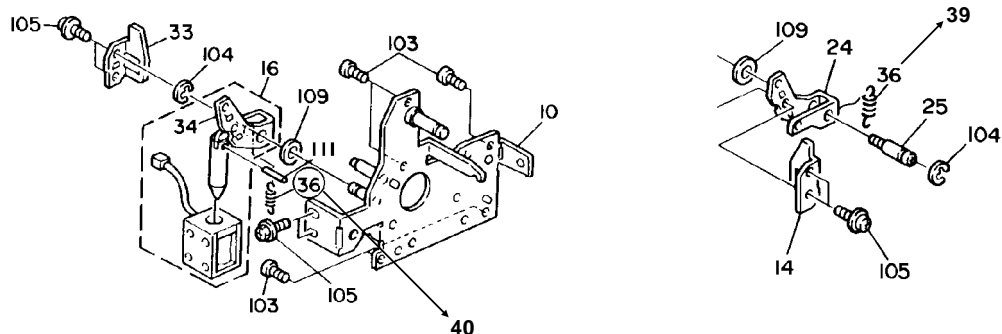
- **UPDATE NO. 5 -** PARTS CATALOG CORRECTIONS - Please correct your Parts Catalog as follows:

1. Part Number Correction

				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	QTY USED	PAGE	ITEM
54032075	50700346	Stepped Screw	2	7	31

Continued...

2. Correct index number 36 on page 30 as shown below.



3. Delete the following item.

			REFERENCE	
PART NUMBER	DESCRIPTION	QTY USED	PAGE	ITEM
55066549	Spring Etching Clutch	2	31	36

4. Add the following items.

			REFERENCE	
PART NUMBER	DESCRIPTION	QTY USED	PAGE	ITEM
C2175530	Pressure Release Spring	1	31	39 *
55076144	Link Spring	1	31	40 *

* DENOTES NEW ITEM

BULLETIN NUMBER: VT1730-005
APPLICABLE MODEL: VT1730

10/20/93

SUBJECT: PAPER FEED PRESSURE

SYMPTOM:

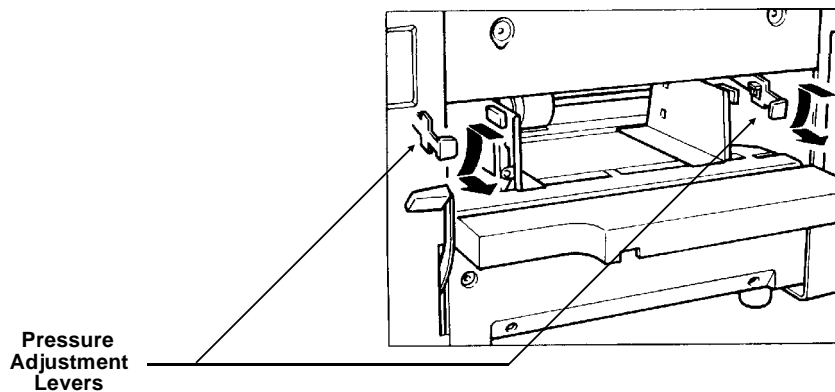
Paper misfeeds occur when 500 sheets of standard paper are placed on the paper table.

CAUSE:

Insufficient paper feed roller pressure.

TEMPORARY COUNTERMEASURE:

Advise Key Operators to change the position of the pressure adjustment levers, as shown below, to increase paper feed pressure.



NOTE: *Since August '93, the pressure adjustment levers have been set in the lower position (stronger pressure) during production.*

PERMANENT COUNTERMEASURE:

Due to the remote possibility of multi-sheet feeding after adjustment of the pressure levers as described above, more suitable tension for the feed pressure springs is being developed.

BULLETIN NUMBER: VT1730-006
APPLICABLE MODEL: VT1730

03/22/94

SUBJECT: MASTER CLAMPER CAM

SYMPTOM:

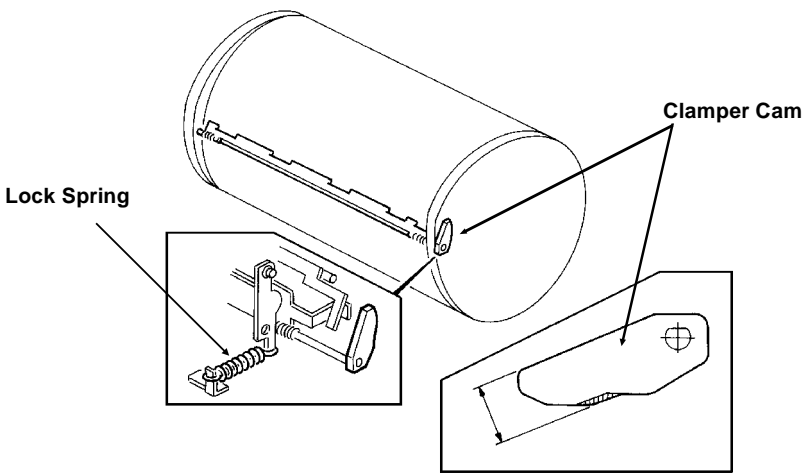
The master is creased around the drum.

CAUSE:

Insufficient pressure applied to the tension roller.

SOLUTION:

The tension of the two springs (Lock Springs) that apply pressure to the tension roller has been increased. Due to the increased spring tension, the shape of the Clamper Cam has been changed to ensure the master clamper opens properly.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2003106	C2174028	Lock Spring	2 → 2	3/S	19	4
C2174556	C2174504	Clamper Cam	1 → 1	3/S	21	13

UNITS AFFECTED:

All VT1730 priports manufactured after Serial Number C3223080001 will have the new style Lock Spring and Clamper Cam installed during production.

BULLETIN NUMBER: VT1730-007
APPLICABLE MODEL: VT1730

04/04/94

SUBJECT: PARTS CATALOG CORRECTION

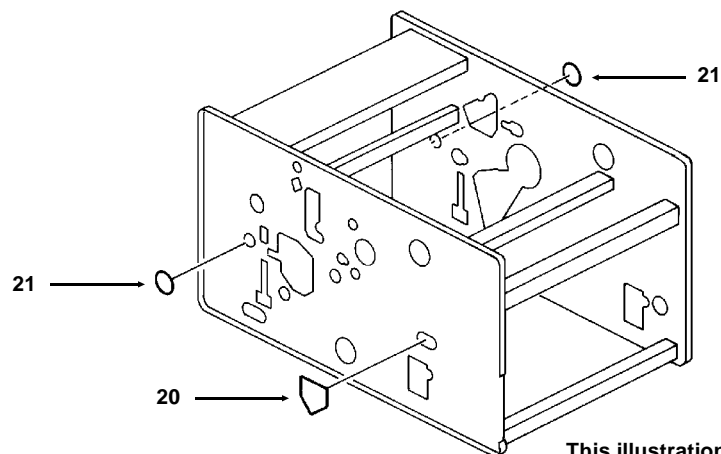
GENERAL:

Please correct your parts catalog as follows:

1. Part number correction

			REFERENCE	
INCORRECT PART NUMBER	CORRECT PART NUMBER	DESCRIPTION	PAGE	ITEM
54032075	50700346	Stepped Screw	7	31

2. Parts not listed



This illustration is found
on page 36

			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
C2053150	Seal - Large	1	37	20*
C2072005	Seal - 30	2	37	21*

*DENOTES NEW ITEM

BULLETIN NUMBER: VT1730-008
APPLICABLE MODEL: VT1730

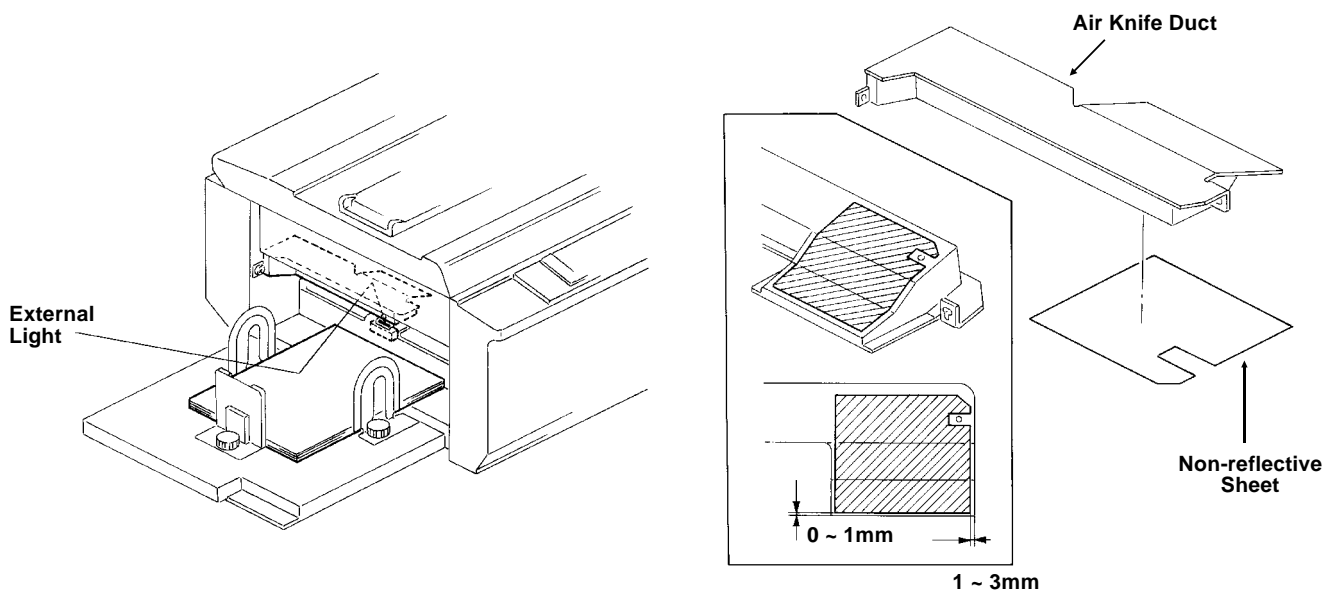
04/15/94

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued for all VT1730 Parts Catalogs. This information should be incorporated into all existing VT1730 Parts Catalog documentation.

- **UPDATE NO. 1 - NON-REFLECTIVE SHEET** - External light may signal a false misfeed at the exit sensor as shown below. To minimize this, a non-reflective sheet has been added on the air knife duct.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
C2176031	Non-reflective Sheet	0 → 1	33	27*

* DENOTES NEW ITEM

UNITS AFFECTED:

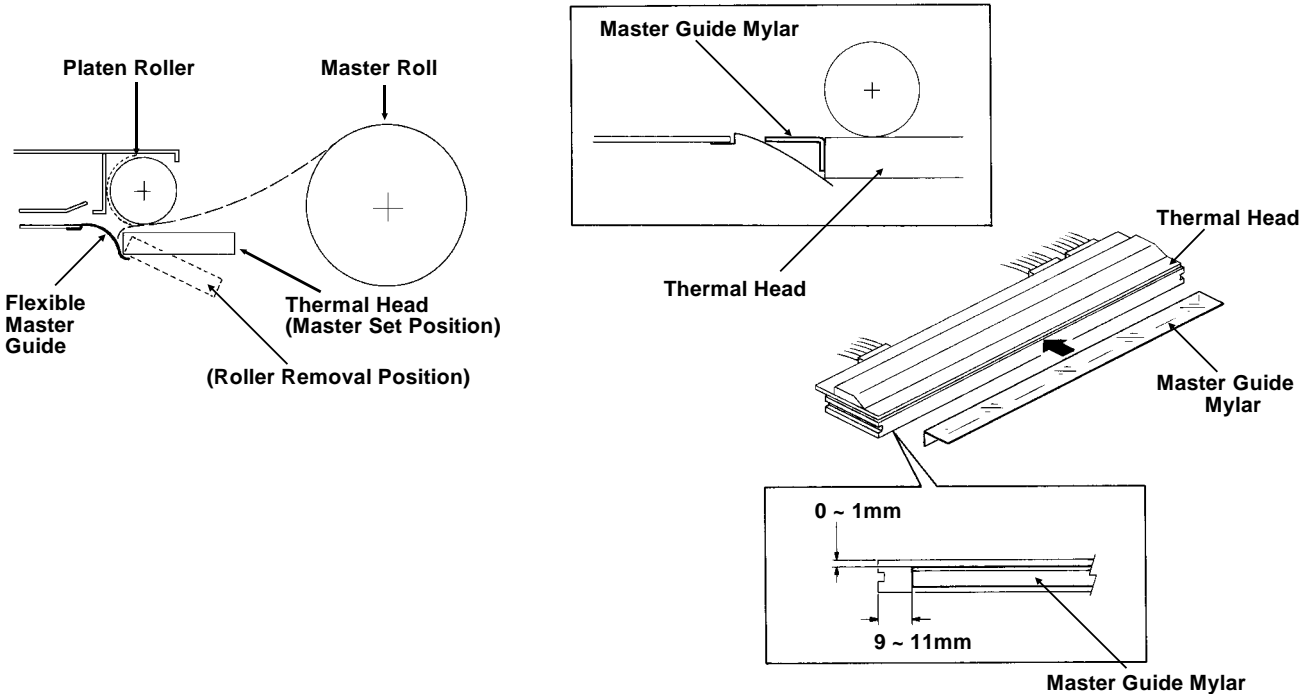
All VT1730 priports manufactured after Serial Number C3223110001 will have the non-reflective sheet installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

- **UPDATE NO. 2 - MASTER GUIDE MYLAR** - There are two positions for the thermal head release lever: one is to set the master and the other is to remove the platen roller. If an operator mistakenly uses the roller removal position for the master set, the leading edge of the master tends to hit the flexible master guide as shown below. As a result, after the master cut button is pressed, the master will wrinkle and wrap around the platen roller. To ensure the master feeds smoothly, a strip of mylar has been added on the thermal head.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
C2174035	Master Guide Mylar	0 → 1	19	29*

DENOTES NEW ITEM

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223120001 will have the new Master Guide Mylar installed during production.

- **UPDATE NO. 3 - PARTS CATALOG CORRECTION** - Please correct your Parts Catalog as follows:

			REFERENCE	
INCORRECT PART NUMBER	CORRECT PART NUMBER	DESCRIPTION	PAGE	ITEM
C2174026	C2174025	Thermal Head Base	19	22
55066150	C2174028	Lock Spring	19	23

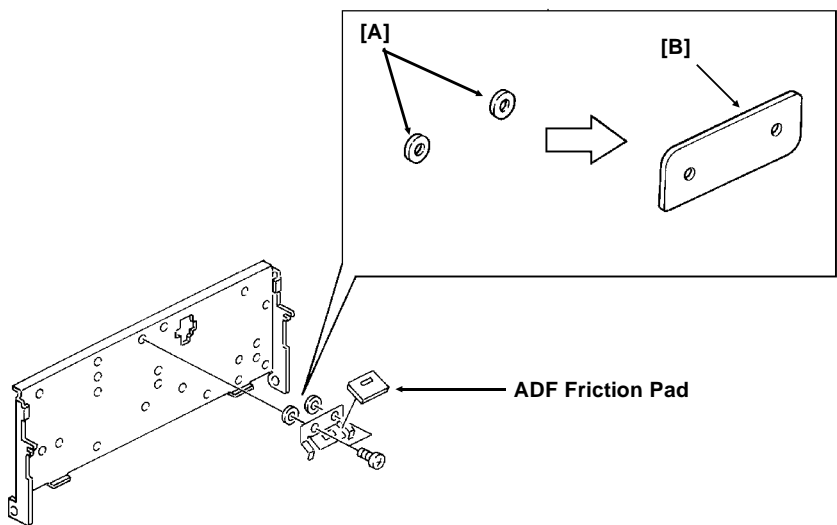
BULLETIN NUMBER: 1730-009
APPLICABLE MODEL: VT1730

05/24/94

SUBJECT: PARTS CATALOG UPDATE

GENERAL:

To facilitate assembly, the ADF friction pad spacers [A] have been changed from two washers to a thin rectangular plate [B]. The spacers [A] had been installed from the first production, although they are not listed in the parts catalog. This information should be incorporated into all existing VT1730 Parts Catalog documentation.



			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
C2173026	Spacer - 0.5 x 13 x 46	0 → 1	9	20*

* DENOTES NEW ITEM

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3223090001 will have the new style spacer installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

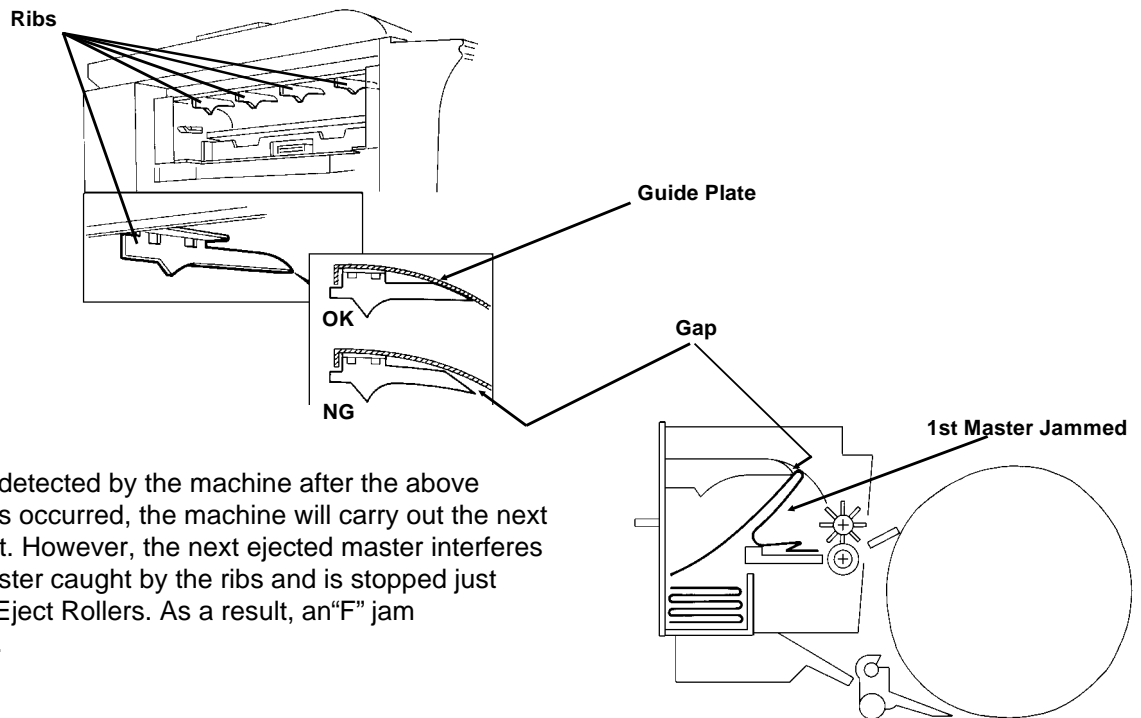
SUBJECT: MASTER EJECT JAMS

SYMPTOM:

1. Frequent master eject jams at location "F".
2. The master wraps around the upper and/or lower master eject rollers.
3. "F" jam cannot be reset because the actuator of the master eject sensor is caught under the pressure plate.

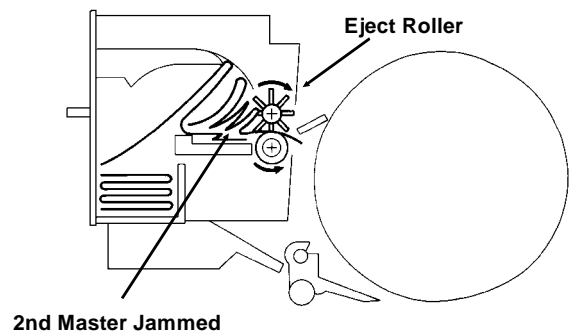
CAUSE:

There are 4 ribs to guide the ejected master in the Master Eject Unit. There is a small gap between the lead edge of the ribs and the guide plate. If the gap is too big, the middle part of the master tends to rub against the ribs as the pressure plate moves to compress the master in the eject box.



If no jam is detected by the machine after the above situation has occurred, the machine will carry out the next master eject. However, the next ejected master interferes with the master caught by the ribs and is stopped just behind the Eject Rollers. As a result, an "F" jam is indicated.

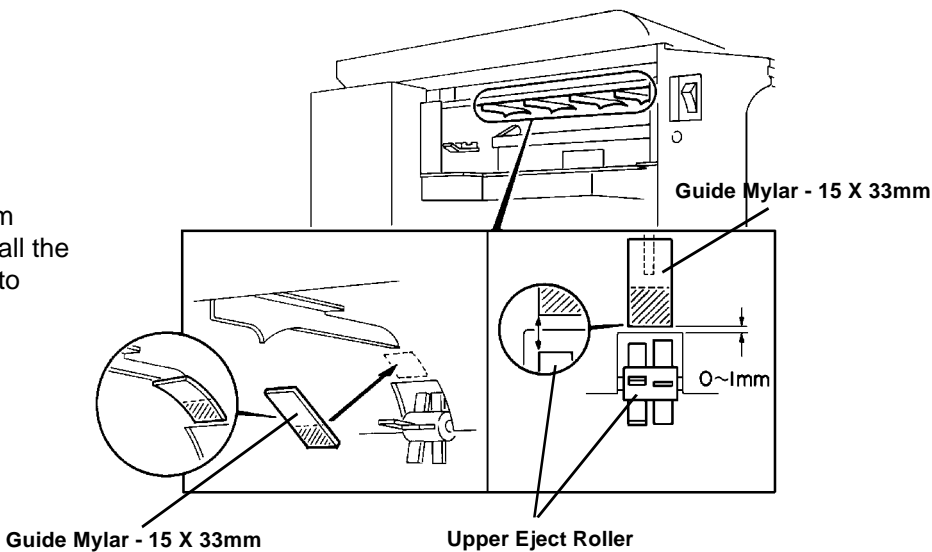
Also, if there is no space for the master to proceed (due to the previous master jam), the master wraps around the Eject Roller. If the master is stopped on the Master Eject Sensor, the sensor actuator remains pushed down while the pressure plate is in motion. After the pressure plate returns to its home position, the sensor actuator is trapped under the plate. The result is an "F" jam indication that cannot be reset.



FIELD COUNTERMEASURE:

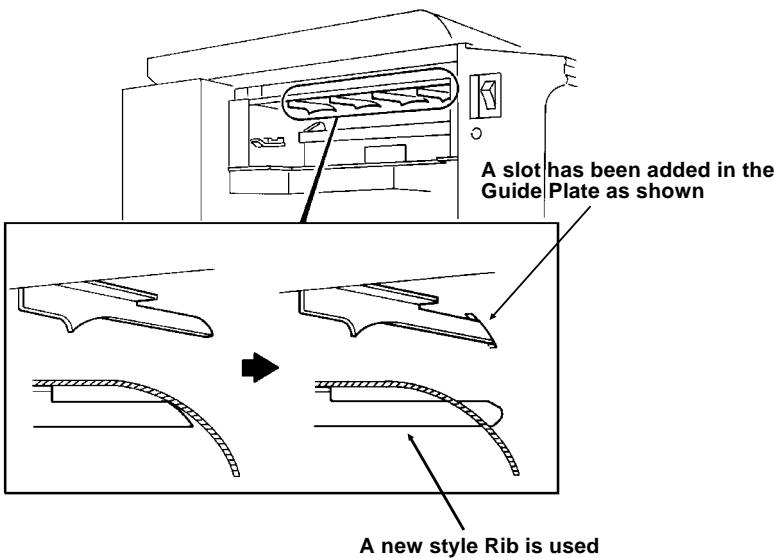
A mylar strip, the Guide Mylar - 15 x 33 mm has been registered as a service part. Install the mylar strips on the lead edge of the 4 ribs to cover the gap as shown.

NOTE: 4 mylars are required for one unit.



PRODUCTION COUNTERMEASURE:

The ribs fixed (welded) to the guide plate have been changed as shown to prevent any gap at the leading edge.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
	C2179500	Guide Mylar - 15 X 33mm	4	25	30*
C2173561	C2173567	Guide Plate - Eject Unit	1	25	3

* DENOTES NEW ITEM

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C322406XXXX will have the new style Eject Unit Guide Plate and Guide Mylar installed during production.

BULLETIN NUMBER: 1730-011
APPLICABLE MODEL: VT1730

05/12/95

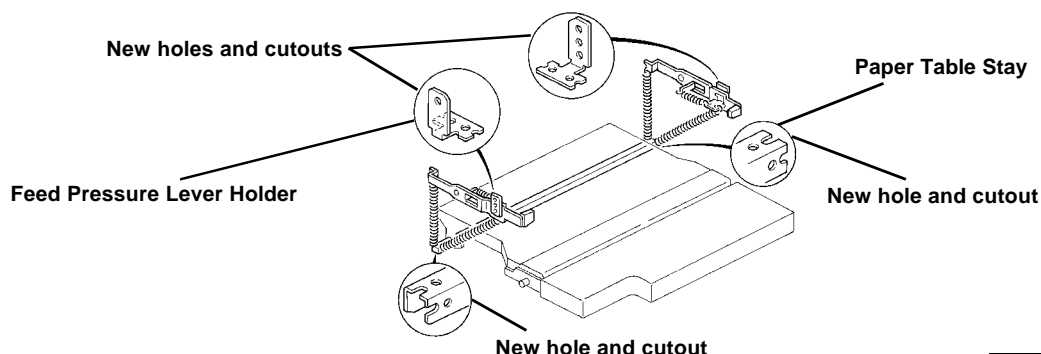
SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued for all VT1730 Parts Catalogs. This information should be incorporated into all existing VT1730 Parts Catalog documentation.

- **UPDATE NO. 1 - FEED PRESSURE SPRINGS** - Paper misfeeds may occur when the Pressure Adjustment Levers are in the upper position (the weak paper feed pressure position) and 500 sheets of standard copy paper are set on the paper tray. To ensure proper paper feed when the weak pressure position is selected, two springs have been added. To connect the springs, holes and cutouts have been added to the Paper Table Stay and Feed Pressure Lever Holder as shown below.

NOTE: The factory setting for the pressure levers has been changed to the upper position.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2175021	C2175023	Paper Table Stay	1 → 1	1	15	15
C2175069	C2175065	Holder - Paper Pressure Lever	2 → 2	1	15	27
	C2175063	Feed Pressure Spring - 135mm	0 → 2		15	35 *

* DENOTES NEW ITEM

UNITS AFFECTED:

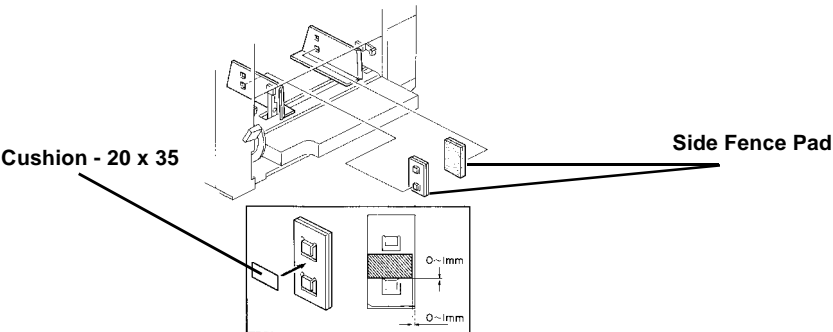
All VT1730 Priports manufactured after Serial Number C3224080001 will have these modifications installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

UPDATE NO. 2 - SIDE FENCE PAD CUSHION - To ensure that the Fence Pads fit securely on the Side Fences, the Cushion (C2175017) has been added to each Side Fence as shown below.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2175014	C2175019	Side Fence Pad	2 → 2	0	15	7
	C2175017	Cushion - 20 x 35	0 → 2		15	36 *

* DENOTES NEW ITEM

NOTE: The new Side Fence Pad (C2175019) includes the Cushion (C2175017).

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3224070001 will have these modifications installed during production.

● **UPDATE NO. 3 -** MAIN BOARD ROM - The Main Control Board ROM has been changed to enable the installation of the Interface Unit - 10 Type 2.

NOTE: For machines which are not fitted with the Interface Unit - 10 Type 2, the old and new ROMs are interchangeable. Also, the part number for the Main Control Board remains the same although the suffix has been advanced from R to S.

For machines with the Interface Unit - 10 Type 2 installed, step 4 of the installation procedure is no longer required.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
C2178005		IC - TMS27C512-15JL	1 → 0	35	15
	C2178015	IC - M27C512-12F1	0 → 1	43	1

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3224080001 will have the new style Main Control Board/ROM installed during production.

BULLETIN NUMBER: 1730-012
APPLICABLE MODEL: VT1730

05/12/95

SUBJECT: PRESSURE PLATE HEIGHT POSITION

SYMPTOM:

The trailing edge of the ejected master is caught by the lower eject rollers.

CAUSE:

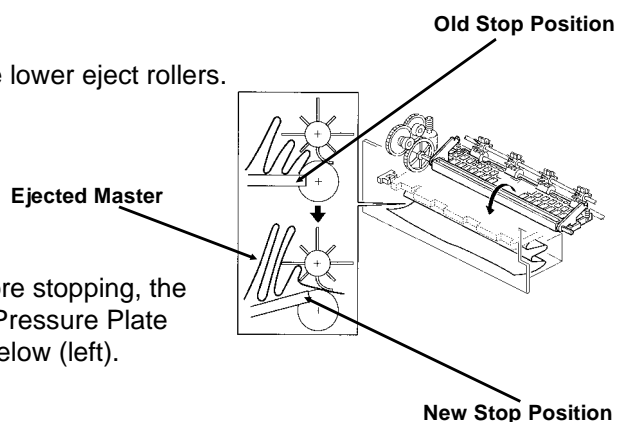
The Pressure Plate stop position is too low.

PRODUCTION COUNTERMEASURE:

To allow the Pressure Plate to raise slightly higher before stopping, the feeler on the Pressure Plate, which is detected by the Pressure Plate Home Position Sensor, has been enlarged as shown below (left).

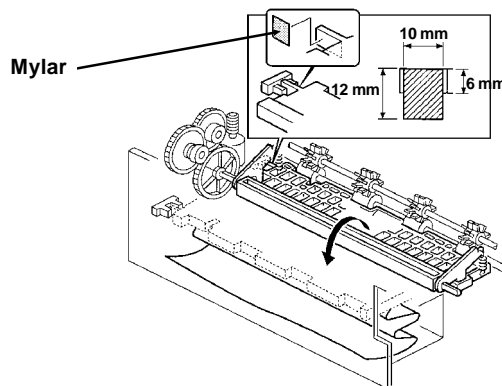
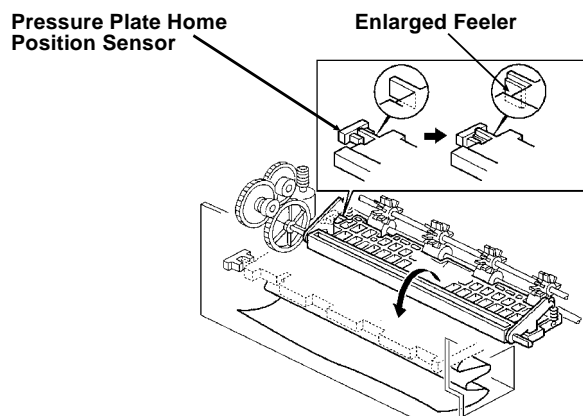
FIELD COUNTERMEASURE:

Enlarge the feeler on the Pressure Plate by attaching a piece of mylar onto the feeler as shown below (right).



NOTE: 1. The mylar cannot be transparent as the Pressure Plate Home Position Sensor is a photo-reflective type sensor.

2. The size of the mylar must not exceed the dimensions indicated in the illustration. If the mylar is too large, the Pressure Plate will interfere with the transportation of the ejected master.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2173551	C2173556	Pressure Plate	1 → 1	1	25	4

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3224120001 will have this modification installed during production.

BULLETIN NUMBER: VT1730/1800 - 013

02/21/96

APPLICABLE MODEL: VT1730

SUBJECT: MAIN BOARD ROM

GENERAL:

The ROM on the Main Board has been changed to enable the use of the PCRIP-10 Controller with the VT1730. This information should be incorporated into all existing VT1730 Parts Catalog documentation

NOTE: *For machines which are not fitted with the PCRIP-10 Controller, the old and new ROMs are interchangeable.*

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
C2178015	C2178016	IC - M27C512-12F1	1 → 1	35 43	15 1

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3225040001 will have the new style ROM installed during production.

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☒ PARTS

☐ OTHER

BULLETIN NUMBER: VT1730/1800 - 014

02/21/96

APPLICABLE MODEL: VT1730/1800

SUBJECT: INK PUMP IMPROVEMENT

SYMPTOM:

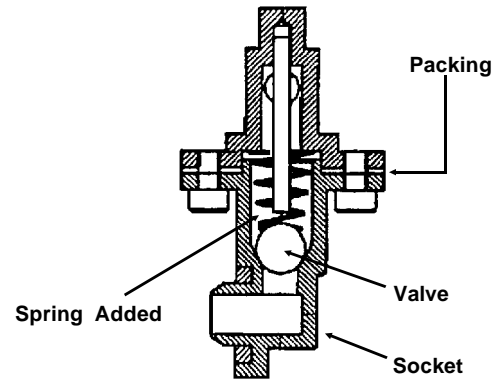
Not all of the ink is supplied from the ink cartridge.

CAUSE:

The small ball, which is used as a valve, is not pushed back properly.

PRODUCTION COUNTERMEASURE:

A spring has been added inside the ink pump to ensure the ball is pushed back as it should be.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
C2244715	Pump Spring - 13mm	1	33	28*
C2004827	Packing	1	33	29*
C2004826	Pump Rubber	1	33	30*

* DENOTES NEW ITEM

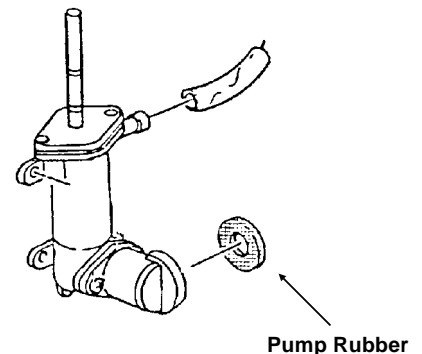
UNITS AFFECTED:

All VT1800 Priports manufactured from December '95 (C341512XXXX) will have the Pump Spring added during production. The VT1730 is no longer in production.

FIELD COUNTERMEASURE:

Install the Pump Spring (C2244715) after removing the socket (2 screws).

- NOTE:**
1. When you remove the socket, ink will leak out. Make sure to place absorbent material under the work area prior to disassembling the ink pump.
 2. There is a packing (gasket) (C2004827) between the socket and the housing (see illustration above). If it is damaged, you may need to replace the packing, however, this normally is not necessary.
 3. The pump rubber (C2004826) is used to ensure that the nozzle of the ink cartridge tightly contacts the pump socket. Make sure that this part is not dislocated. The pump rubber used on the VT1730 and other later models is adhered by glue, however, it is not adhered on the older models.



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☐ PARTS

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CUSTOMER SERVICE GROUP

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: VT1730/1800 - 015

03/29/96

APPLICABLE MODEL: VT1800

*Note: This copy intended as master of original
for reproduction of additional bulletins.*

SUBJECT: FIELD SERVICE MANUAL - INSERT

GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒

- 5-15, 5-16

Updated Information

Thermal Head Removal Procedure

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☐ PAPER PATH

☒ F S M

☐ PARTS

☐ OTHER

BULLETIN NUMBER: VT1730/1800 - 016

04/05/96

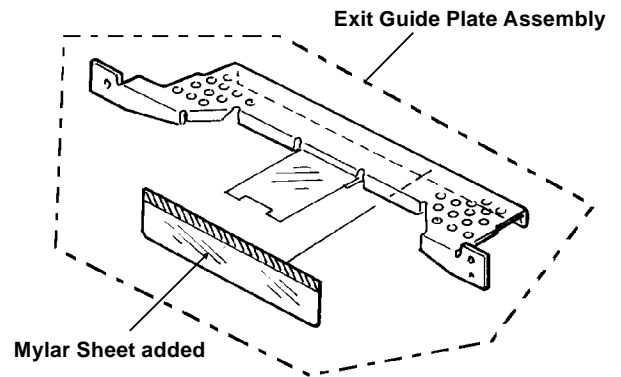
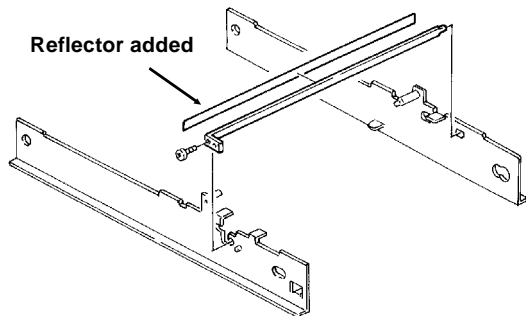
APPLICABLE MODEL: VT1730

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued for all VT1730 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

- **UPDATE NO. 1 - PARTS CATALOG CORRECTION** - Please add the following corrections to your parts catalog.



				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	QTY	PAGE	ITEM
03330060D		Philips Counter Sunk Screw - M3 X 6	2 → 0	7	107
	03230100Z	Philips Counter Sunk Screw - M3 X 10	0 → 2	7	107
	C2173051	Reflector	0 → 1	9	21*
C2173048	C2173095	Feed Roller Stay	1 → 1	11	24
C2176011		Exit Guide Plate	1 → 0	27	1
	C2176010	Exit Guide Plate Ass'y	0 → 1	27	1
	C2176013	Mylar Sheet - 29 x 249	0 → 1	27	38*
06330140Z	06330140G	Parallel Pin - 3 x 14	2 → 2	29	102
C2176131	C2176132	Switch Bracket	1 → 1	35	13
16041362	16041855	Capacitor - 4.7μF 25V	1 → 1	39	125

* DENOTES NEW ITEM

Continued...

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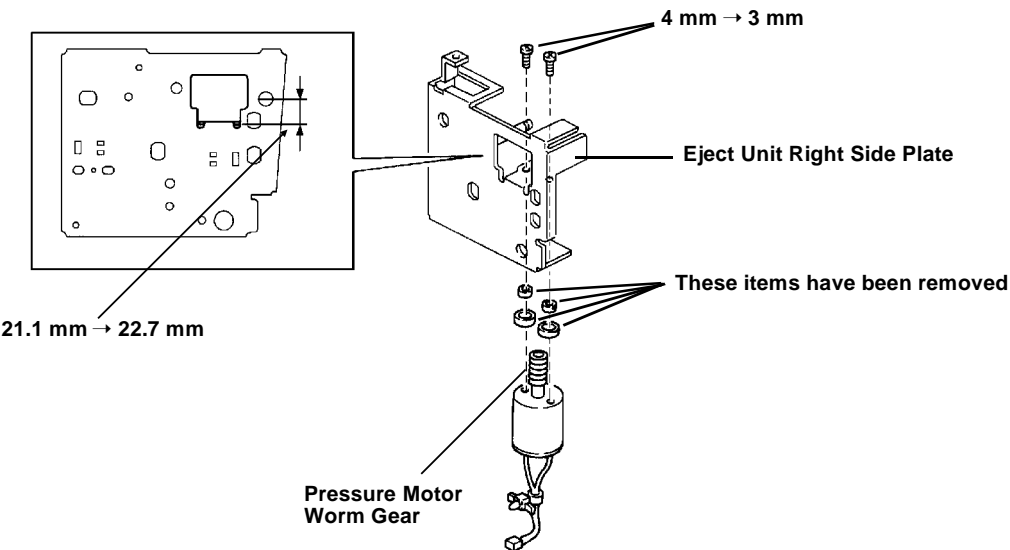
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☐ OTHER

- **UPDATE NO. 2 - MASTER EJECT MOTOR NOISE** - To reduce noise from the master eject motor, the material of the pressure motor worm gear has been changed from a combination of metal and plastic to metal. To accommodate this change, the right side plate has been changed. Also, the bushings and insulators are no longer used and the screws which secure the motor have been changed.



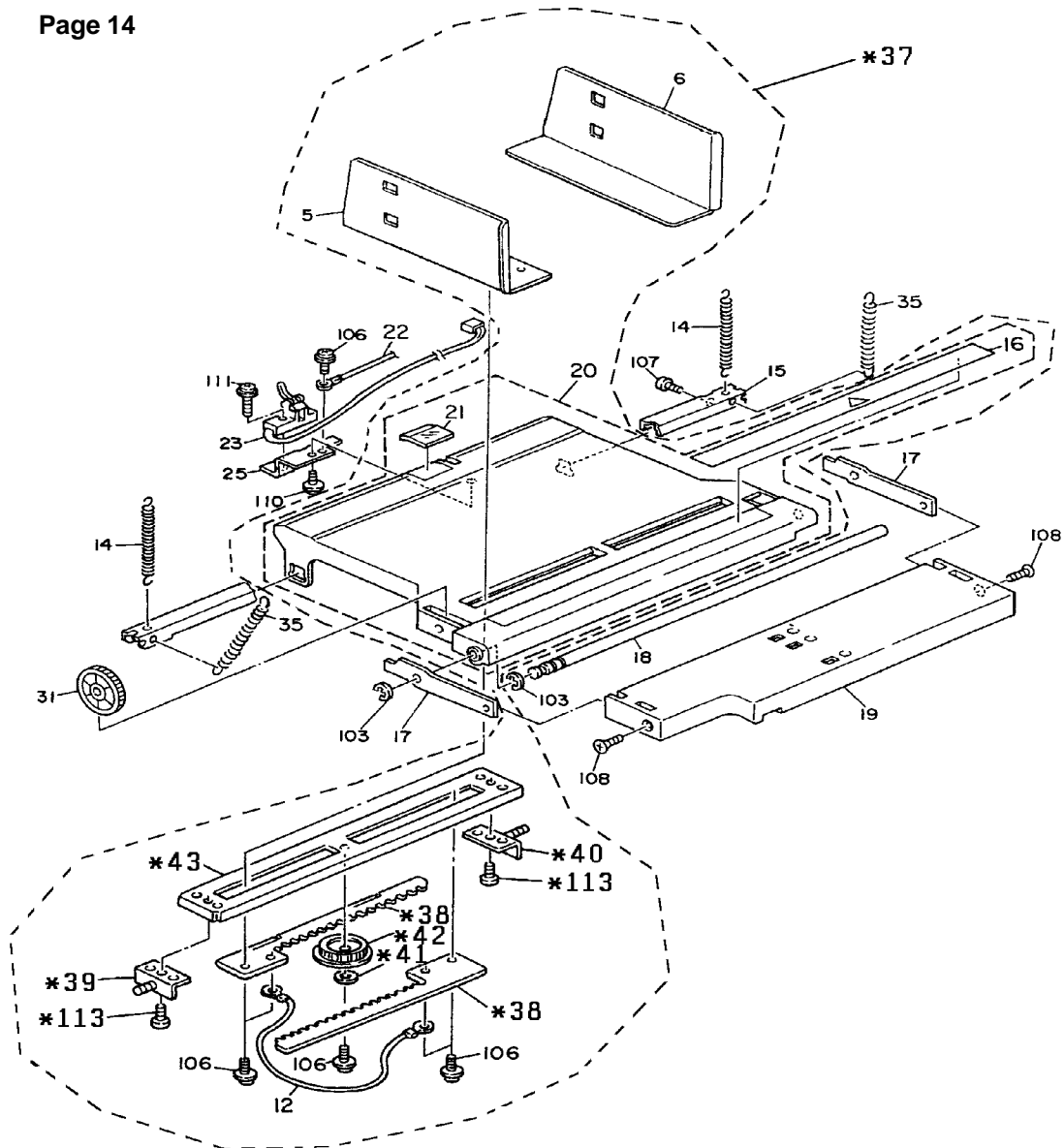
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2098256		Pressure Motor - DC24V	1 → 0		25	9
	C2178447	DC Motor - 24V / 7.2W	0 → 1	1	25	9
C2173516	C2173511	Right Side Plate - Eject Unit	1 → 1	3/S	25	26
C2173591		Insulator	2 → 0	3/S	25	29
07073016B		Bushing - 3 x 1.6	2 → 0	3/S	25	111
03130040W		Philips Pan Head Screw - M3 x 4	n → n-2		25	110
	08011135	Philips Pan Head Screw - M3 x 3	n → n+2	3/S	25	107

UNITS AFFECTED:

All VT1730 Priports manufactured after Serial Number C3224020001 will have the above mentioned parts installed during production.

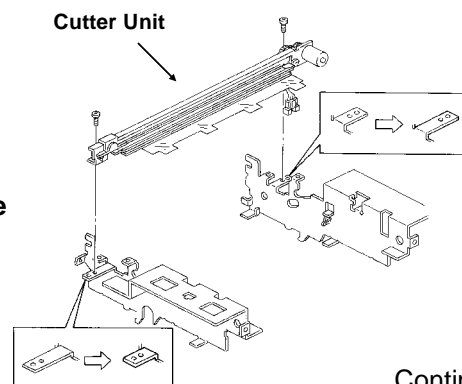
- **UPDATE NO. 3 - PARTS CATALOG UPDATE** - Due to parts standardization, the following part changes have been made.

Page 14



Page 18

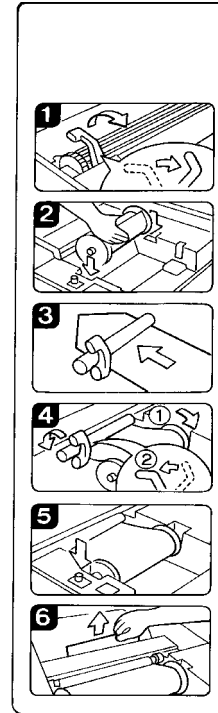
The position of the cutter unit has been shifted to the non-operation side by 3 mm. This is to prevent the edge of the master from touching the guide plate in the cutter unit even if the master is set skewed.



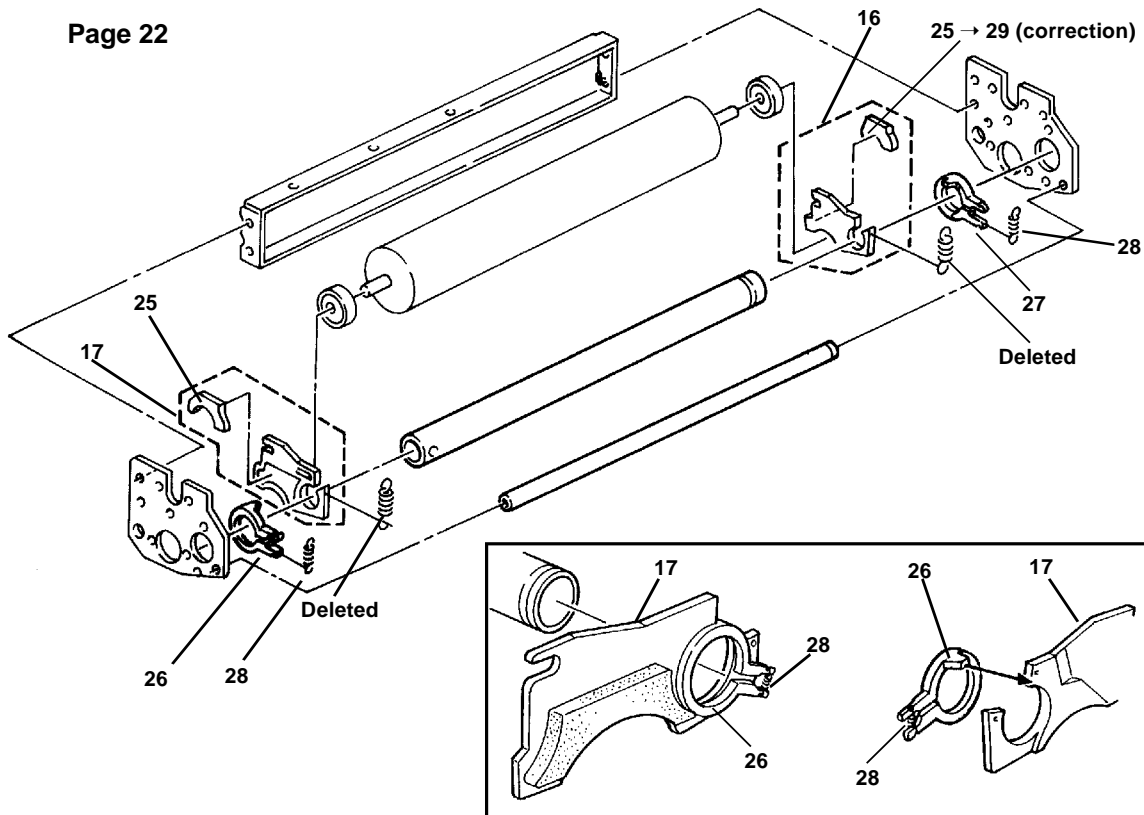
Continued...

Page 46

Step 4 has been added to instruct the operator to rotate the master roll back slightly before setting the platen roller. This is to prevent creasing of the master.



Page 22



Continued...

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2172611	C2172612	Scanner Cover	1 → 1	0	7	12
C2172615	C2172616	ADF Cover	1 → 1	0	9	1
C2173027	C2173028	ADF Friction Pad Ass'y	1 → 1	0	9	19
C2175003	C2255002	Front Side Fence	1 → 1	3	15	5
C2175004	C2255001	Rear Side Fence	1 → 1	3	15	6
C2175022		Spring Lever	2 → 0		15	8
C2175030		Lever Cap	2 → 0		15	9
C2175033		Slider Lever	2 → 0		15	10
C2175031		Lever Shaft	2 → 0		15	11
C2175216	C2175261	Paper Table	1 → 1	3	15	20
C2175036		Side Fence Shaft	1 → 0		15	32
	C2175272	Paper Table Ass'y	0 → 1	3/S	15	37*
	C2173005	Original Guide Rack	0 → 2		15	38*
	C2255016	Front Base Bracket	0 → 1		15	39*
	C2255015	Rear Base Bracket	0 → 1		15	40*
	C2255013	Gear Spacer	0 → 1		15	41*
	C2173006	Gear - Original Guide	0 → 1		15	42*
	C2255010	Paper Table Base	0 → 1		15	43*
07200030G		Retaining Ring - M3	2 → 0		15	105
	08011004	Screw - M4 x 4	0 → 2		15	113*
C2175058	C2175059	Tray Lower Lever	1 → 1	0	15	29
C2174067	C2174167	Platen Roller Cover	1 → 1	0	17	11
C2172522	C2172542	Decal - Master Setting	1 → 1	0	19 47	20 5
C2174377	C2174378	Bracket - Master Sensor	1 → 1	0	19	6
C2174001	C2174101	Front Side Plate - Plotter	1 → 1	3/S	19	27
C2174002	C2174102	Rear Side Plate - Plotter	1 → 1	3/S	19	26
C2174061	C2254061	Release Lever	1 → 1	0	19	10

* DENOTES NEW ITEM

Continued...

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
C2174802	C2174902	Drum Clamper Ass'y	1 → 1	0	21	1
C2174544	C2174744	Clamper Magnet Plate	1 → 1	0	21	3
C2174539	C2174639	Clamper Base	1 → 1	0	21	4
C2174536	C2174636	Teflon Screen - LG	1 → 1	0	21	9
C2174557		Spring	2 → 0		23	4
C2174594	C2184594	Rear Bank Plate	1 → 1	0	23	16
C2174592	C2184592	Front Bank Plate	1 → 1	0	23	17
	C2184558	Front Doctor Roller Ring	0 → 1		23	26*
	C2184559	Rear Doctor Roller Ring	0 → 1		23	27*
	C2184560	Ring Spring	0 → 2		23	28*
C2175696		Sponge - Bank Plate	2 → 1		23	25
	C2174597	Sponge - Rear Bank Plate	0 → 1		23	29*
C2173576	C2173676	Master Eject Box	1 → 1	0	25	1
C2173556	C2173656	Pressure Plate	1 → 1	0	25	4
C2173584	C2173684	Gear - Pressure Plate	1 → 1	0	25	8
C2173531	C2173532	Upper Eject Roller	1 → 1	0	25	17
C2173501	C2173601	Left Side Plate - Eject Unit	1 → 1	0	25	25
C2173511	C2173611	Right Side Plate - Eject Unit	1 → 1	0	25	26
C2174559	C2174659	Ink Pimp	1 → 1	0	33	16

* DENOTES NEW ITEM

BULLETIN NUMBER: VT1730/1800 - 017

06/28/96

APPLICABLE MODEL: VT1800

SUBJECT: FIELD SERVICE MANUAL - INSERT

GENERAL:

The Thermal Head Removal Procedures for the VT1730 and VT1800 have been updated. The Field Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains a set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒

- | | | |
|-----------------------------|---------------------|--|
| • 5-15, 5-16, 5-16a & 5-16b | Updated Information | Thermal Head Removal Procedures |
|-----------------------------|---------------------|--|

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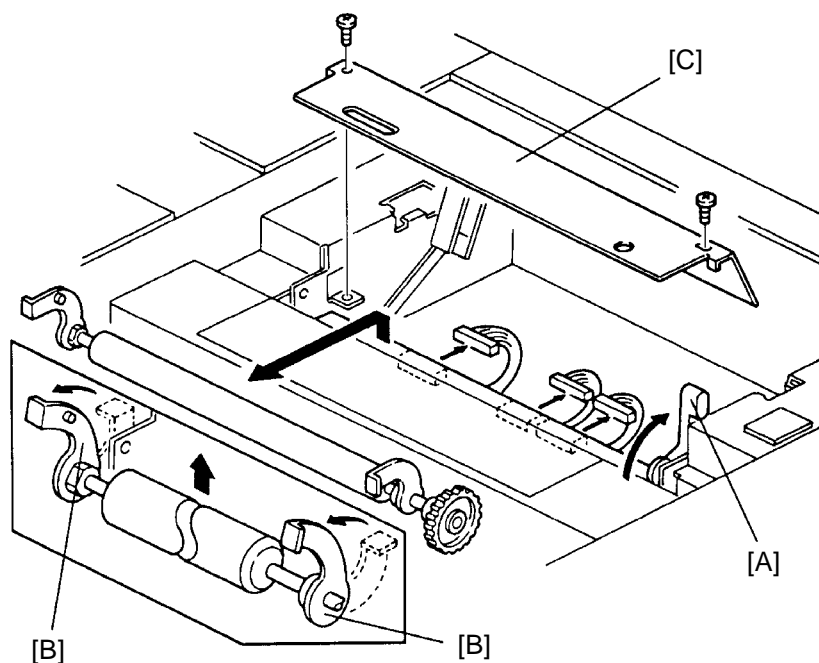
☒ F S M

☐ PARTS

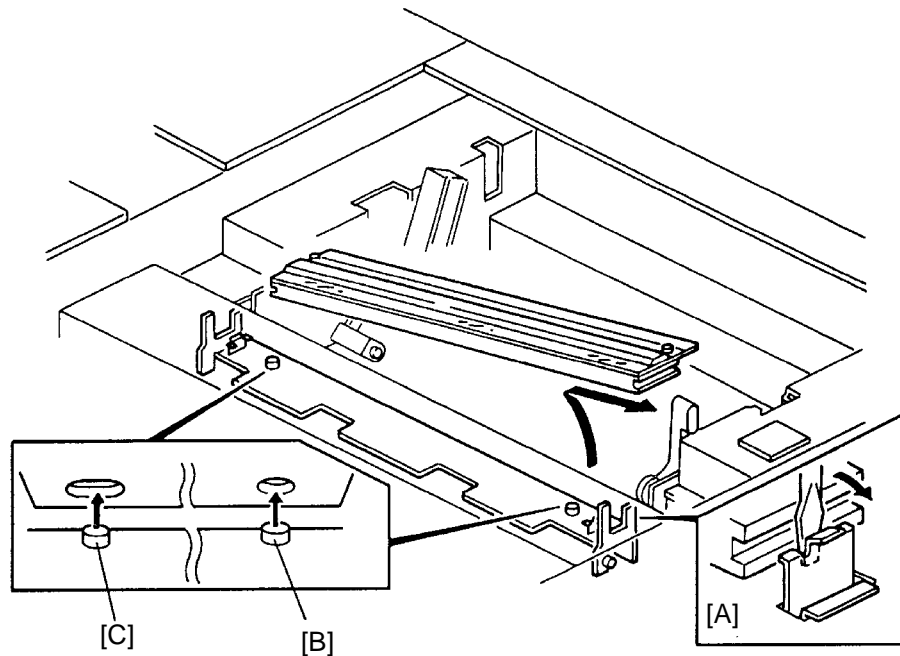
☐ OTHER

3.2 THERMAL HEAD REMOVAL

For the VT1730



1. Turn "OFF" the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Lift the platen roller release lever [A] up until it locks. Then, unhook the lock levers [B] on both ends of the platen roller and remove the platen roller.
4. Remove the thermal head cover [C] (2 screws).
5. Disconnect the connector from the thermal head.



6. Unhook the lock pawl [A] on the front side of the thermal head (operation side) using a small slot screw driver. While doing this, remove the thermal head.

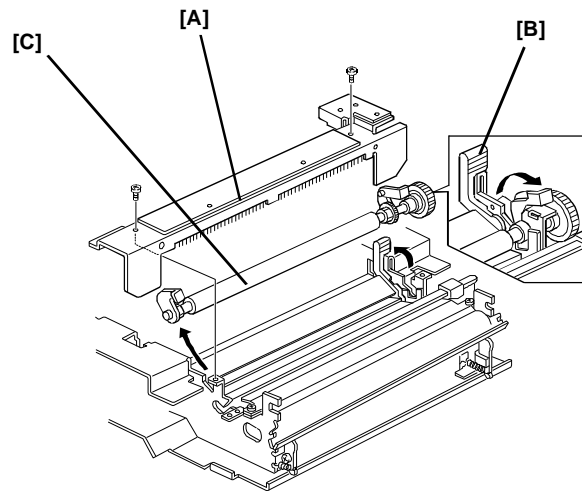
CAUTION: Be careful not to hit the thermal head surface against the plate above it.

NOTE: There are two projections on the thermal head base, and they meet the holes behind the thermal head. The projection on the front [B] (operation side) securely meets the hole, but the other [C] is loose. Therefore, remove the front side first.

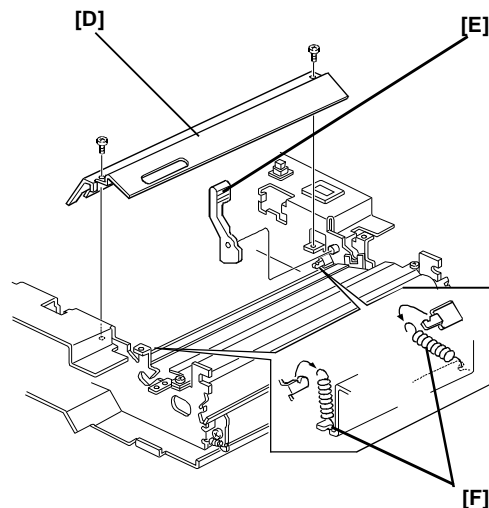
When installing, make sure to set the front side first.

IMPORTANT: If the thermal head has been replaced with a new one, the input voltage must be readjusted. Follow the "THERMAL HEAD VOLTAGE ADJUSTMENT" section in the service manual.

For the VT1800



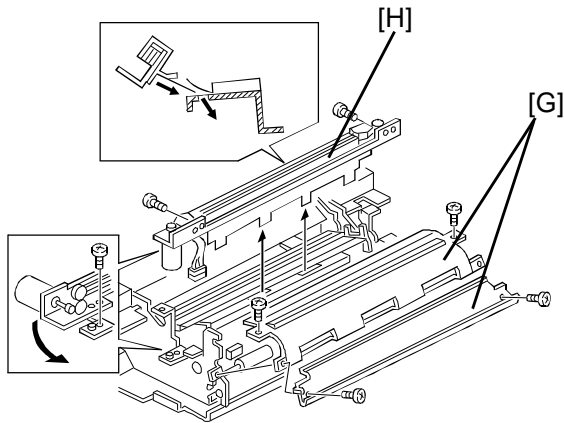
1. Turn off the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Remove the platen roller cover [A].
4. Lift the platen roller release lever [B] up until it locks. Then, unhook the lock levers and remove the platen roller [C].



5. Remove the thermal head cover [D], then remove the release lever [E].
6. Remove the two springs [F].

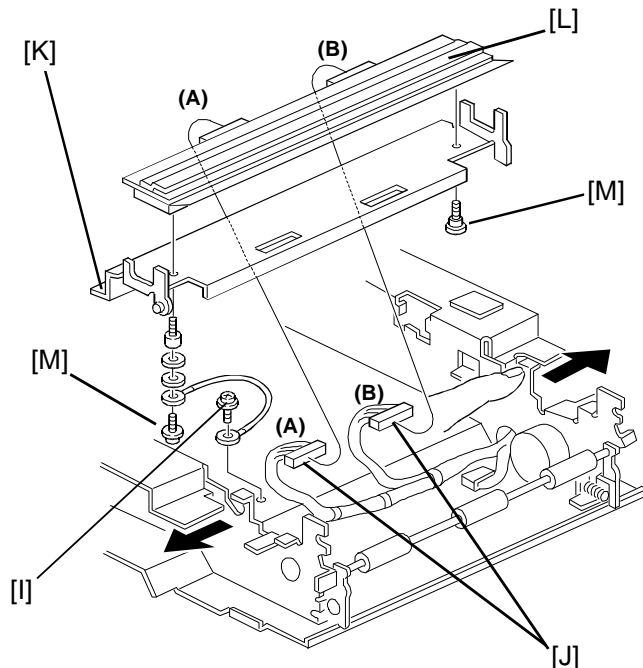
IMPORTANT: If the thermal head has been replaced with a new one, the input voltage must be readjusted. Follow the "THERMAL HEAD VOLTAGE ADJUSTMENT" section in the service manual.

**For VT1800s manufactured before
Serial Number C341604XXXX**



7. Remove the guide plate [G].

8. Remove the cutter unit [H].



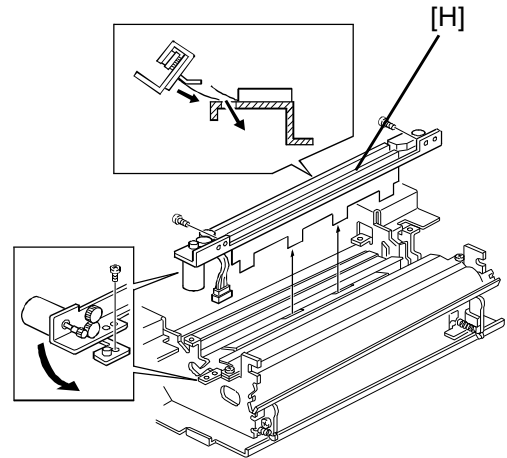
9. Remove the grounding screw [I].

10. Disconnect the connectors [J] from the thermal head.

11. While spreading both side frames outward, unhook the pins on both sides of the thermal head bracket [K] and remove the bracket (with the thermal head).

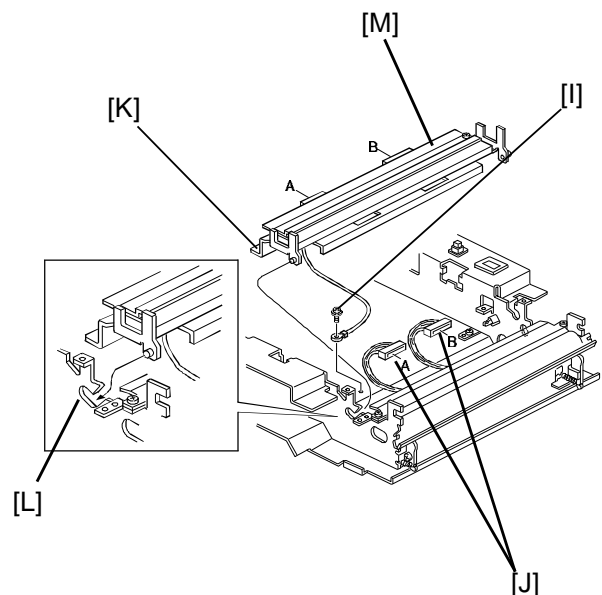
12. Remove the two screws [M] and remove the thermal head.

**For VT1800s manufactured after
Serial Number C341604XXXX**



7. Remove the cutter unit [H].

8. Remove the grounding screw [I] (below).



9. Disconnect the connectors [J] from the thermal head.

10. Unhook the pins on non-operation sides of the thermal head bracket [K] through the cutout [L] and remove the bracket (with the thermal head).

NOTE: The cutout [L] has been newly added (April '96).

11. Remove the two screws and remove the thermal head [M].

BULLETIN NUMBER: VT1730/1800 - 018**10/15/96****APPLICABLE MODEL:** VT1730/1800**SUBJECT: INK ON LEADING EDGE OF COPIES****SYMPTOM:**

During a long printing run, ink appears at the leading edge of copies. At first, it is very hard to see, but it becomes more visible as the printing continues.

CAUSE:

Due to rough paper edges, the master becomes damaged.

Just when the leading edge of the paper is positioned under the drum, it is pressed against the drum surface, so that the master is wrapped around by the press-roller. Due to this repeated action, the master's surface, where the paper leading edge contacts, is gradually torn.

Also, if the paper generates a lot of paper dust, it is accumulated on the press-roller surface and damages the master in the same manner.

Normally, even if the master is damaged, ink does not exist around the area beneath the master where the paper leading edge contacts (there are no holes in the metal screen). However, after a long printing run, ink leaks onto this area and is transferred to the paper through the damaged part of the master.

SOLUTION:

1. Change the paper type. Re-setting the paper on the paper feed table up side down so that the rough edge of the paper faces downward may also solve the problem.
2. Change the image position on the paper slightly using the IMAGE SHIFTING key before the leading edge of the paper becomes dirty with ink.
3. Cover the leading edge part of the cloth screen on the drum with tape, so that ink does not leak even when the master is damaged. See page two (2) for installation instructions for the tape.

Note: This copy intended as master of original
for reproduction of additional bulletins.

■ COPY QUALITY

■ MECHANICAL

□ ELECTRICAL

□ F S M

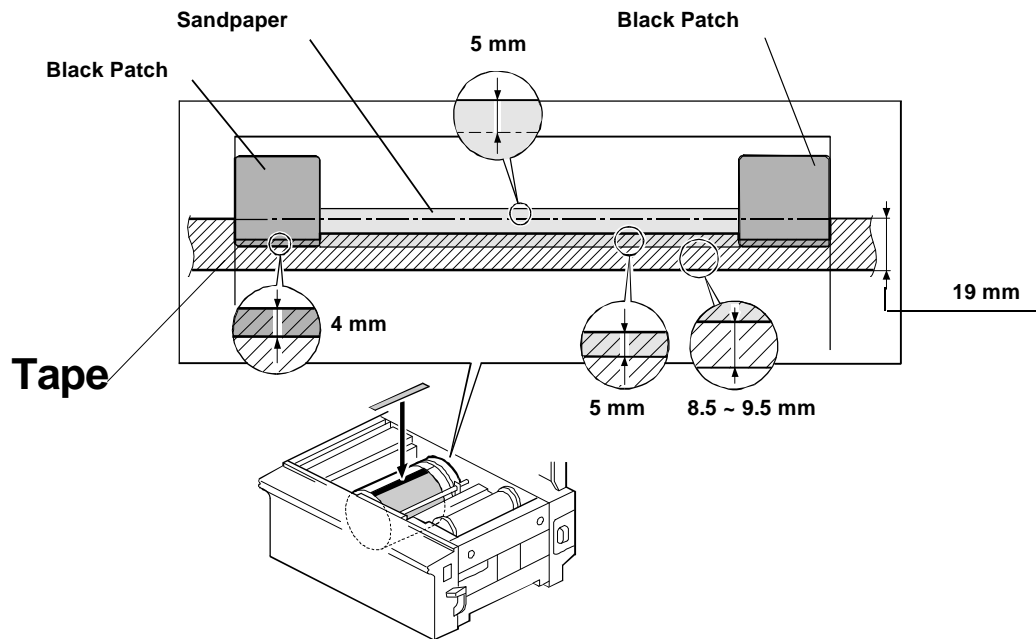
□ PARTS

□ OTHER

Continued...

Installation Instructions:

- It is recommended to use: **Teflon Tape - 19 mm: A0129112**
- The position of the tape has been determined to maintain the specified 5 mm leading edge blank margin for copies.
- Even after installing the tape, the same problem may occur if the leading edge registration of copies is not adjusted properly (if the paper feed timing is delayed). First, check the leading edge registration of the copies. If it is out of specification, follow the "LEADING EDGE REGISTRATION ADJUSTMENT" procedure in the Service Manual.
- Strips of sandpaper are used on the leading edge portion of the cloth screen. This prevents the master, wrapped around the drum, from slipping out of the master clasper due to the repeating press-roller ON/OFF action. Avoid covering all the sandpaper when you install the tape. However, to adhere the tape firmly, some area of the sand paper should be covered.
- Even if the sandpaper is not used on the cloth screen (the old type cloth screen), install the tape at the same position by measuring the distance from the edge of the cloth screen. Refer to the distance between the edge of the screen and the sand paper, which is described below.



- Cut the tape where it covers the sandpaper as shown. The indicated area must be left as shown to hold the tape on the screen firmly. Be careful not to damage the cloth screen surface.
- **Also, cut the tape where it covers the black patches (for the drum master detection sensor) as shown. If they are covered, the drum master detection does not work properly.**
- Cut both edges of the tape at the edge of the metal screen. Do not let the tape ride over the drum flanges.
- Even if the sandpaper is not used on the cloth screen (the old type cloth screen), install tape at the same position by measuring the distance from the edge of the black patch to the lower edge of the tape (between 8.5 and 9.5 mm).



Field Engineering Bulletin Digital Duplicator Series

TECHNICAL OPERATIONS

BULLETIN NO. 3100-001 DATE 4/17/96

Subject THERMAL HEAD REMOVAL PROCEDURE		
<input type="checkbox"/> Copy Quality <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input checked="" type="checkbox"/> Technical Information <input type="checkbox"/> General Information	Model - Product/ Serial Numbers Affected	Modification Schedule:
	3100DNP	<input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time

This bulletin is to inform you of the thermal head removal procedure, which is unique to the 3100DNP but is not been described in the service manual.

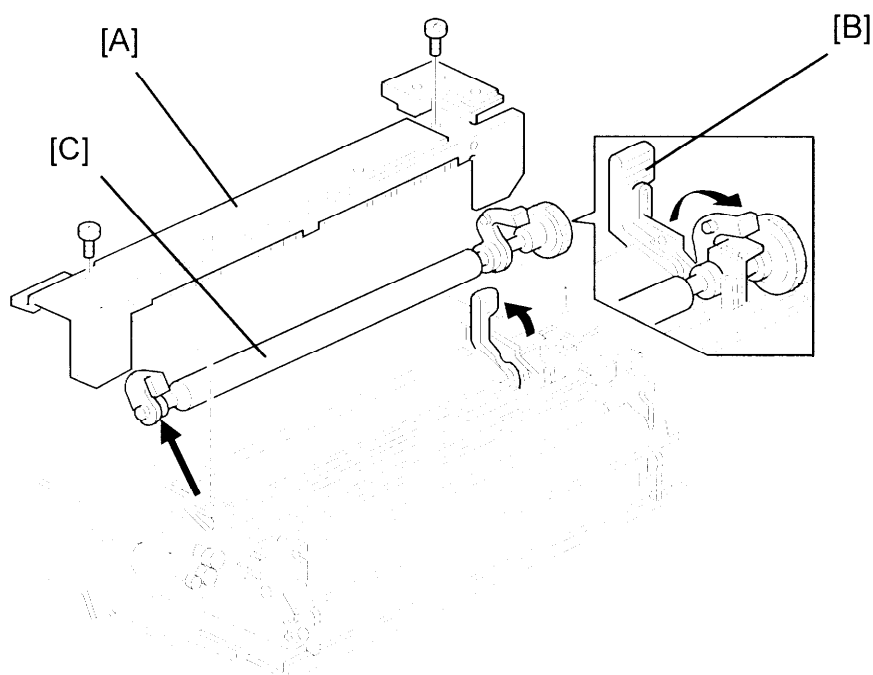
At the same time, this is to inform you that a modification will be implemented into the production to make the removal procedures easier. The details of the modification is as follows:

A cutout has been made on the rear side (non-operation side) frame of the plotter unit. (The part number: C2174102, remains the same, but all service parts are the new type only.) This enable the removal of the thermal head (with the bracket) without having to forcibly spread out the side frames. Refer to the new thermal head removal procedure.

This modification will be applied from the April 1996 production run.

Add the following pages of the new and old procedures for the thermal head removal to your service manual.

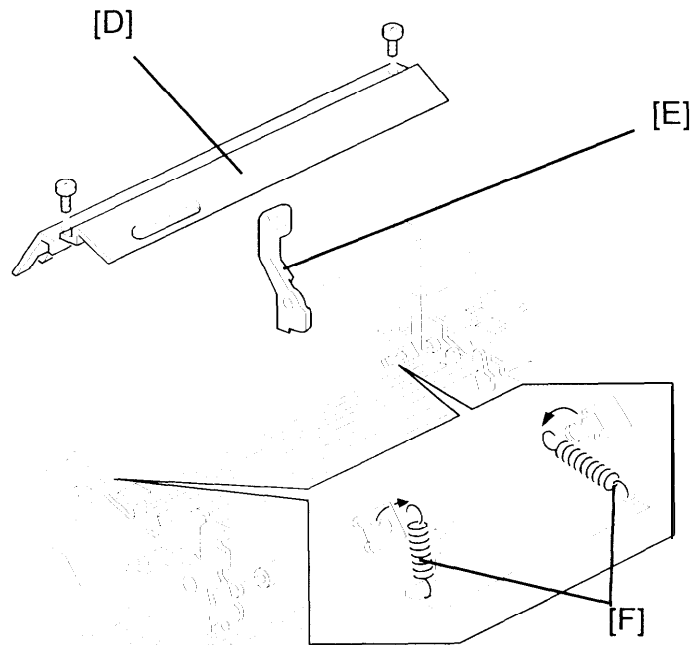
THERMAL HEAD REMOVAL PROCEDURE



CAUTION: IF the thermal head has been replaced with a new one, the input voltage must be readjusted. Follow the "THERMAL HEAD VOLTAGE ADJUSTMENT" section in the technical manual.

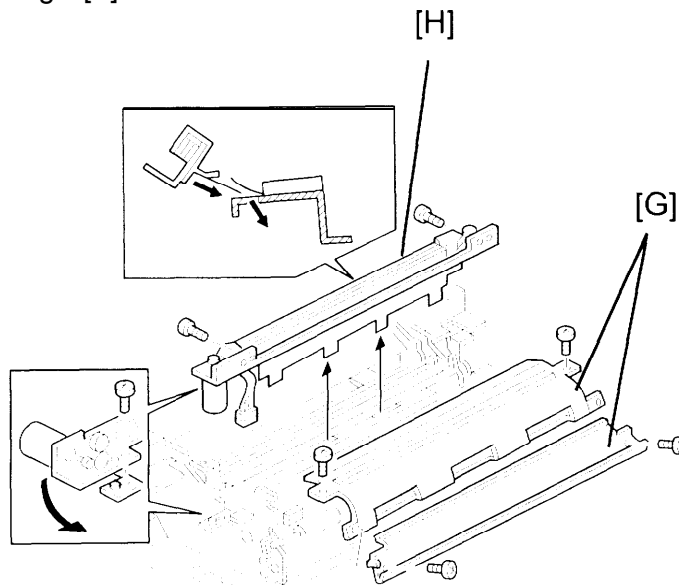
1. Turn off the main switch and disconnect the power plug.
2. Remove the plotter unit. (Refer to the "PLOTTER UNIT REMOVAL" section in the technical manual.)
3. Remove the platen roller cover [A].
4. Lift the platen roller release lever [B] up until it locks. Then, unhook the lock levers and remove the platen roller [C].

SUBJECT: THERMAL HEAD REMOVAL PR-OCEDURE



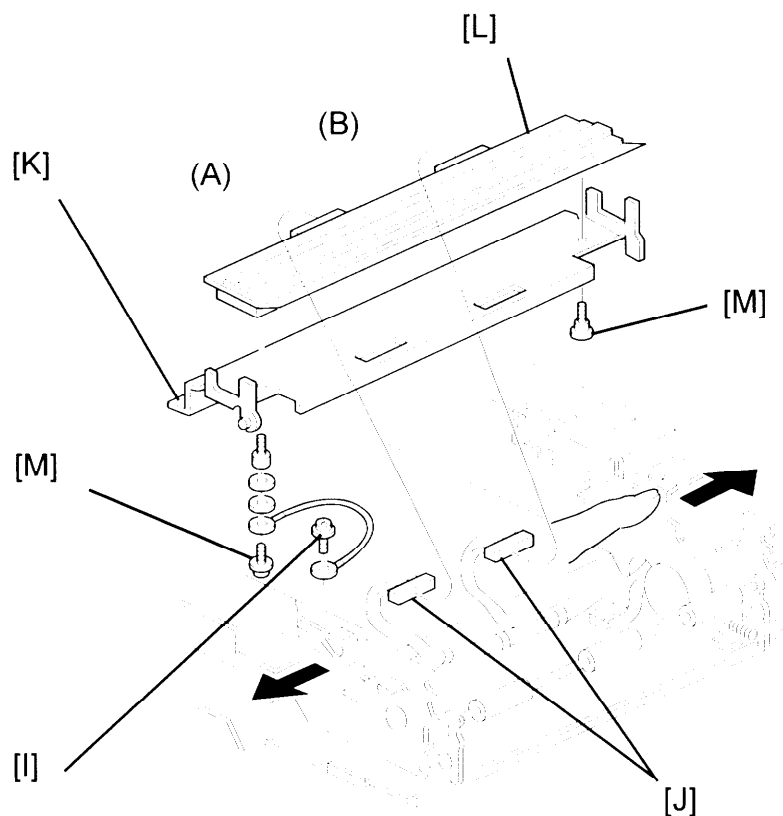
5. Remove the thermal head cover [D], then remove the release leve[E].

6. Remove the two springs [F].



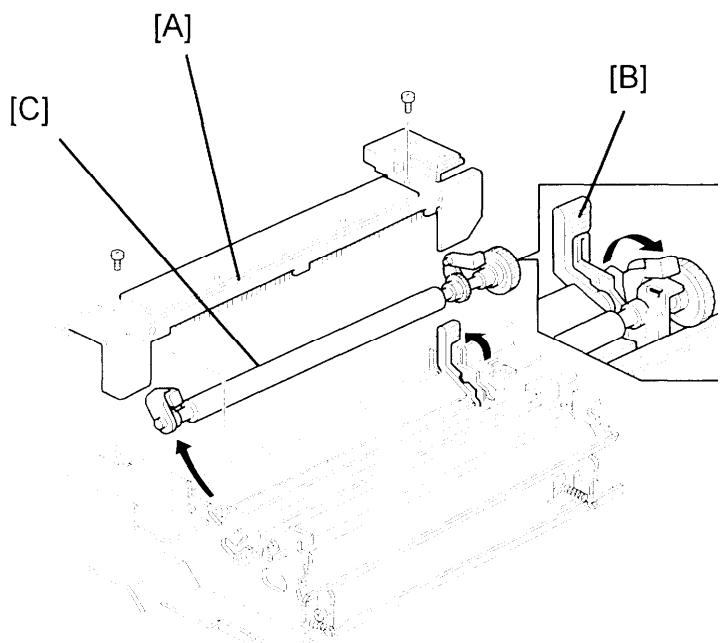
7. Remove the two guide plate [G].

8. Remove the cutter unit[H].



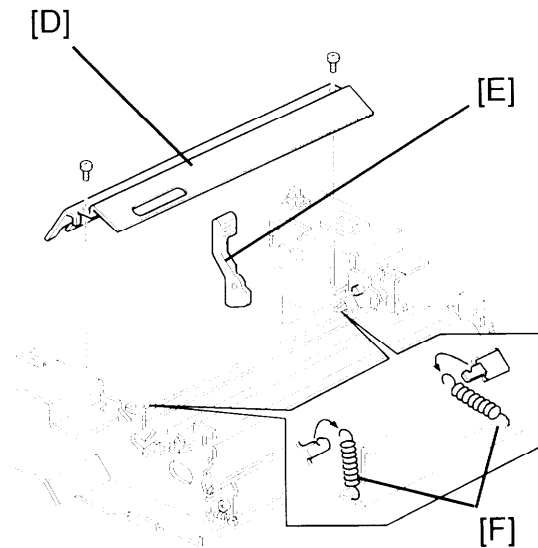
9. Remove the grounding screw [I].
10. Disconnect the connectors [J] from the thermal head.
11. While spreading the both side frames outward, unhook the pins on both sides of the thermal head bracket [K] and remove the bracket (with the thermal head).
12. Remove the two screws [M] and you can remove the thermal head [L].

THERMAL HEAD REMOVAL PROCEDURE (New Procedure)

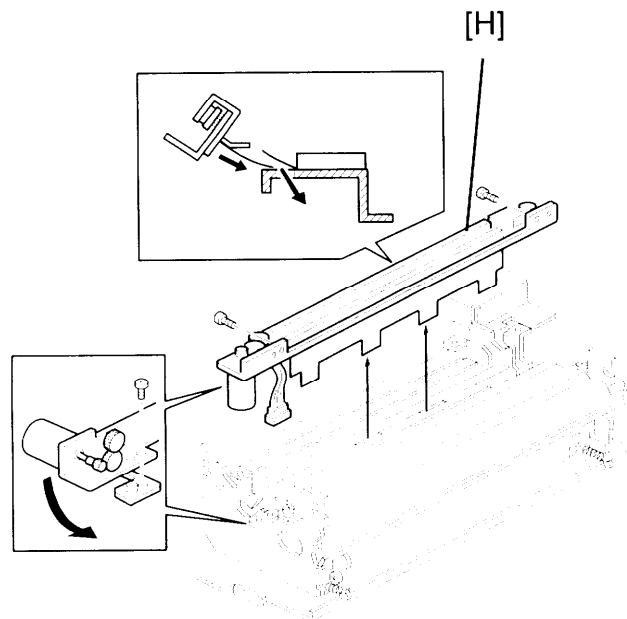


CAUTION: IF the thermal head has been replaced with a new one, the input voltage must be readjusted. Follow the "THERMAL HEAD VOLTAGE ADJUSTMENT" section in the technical manual.

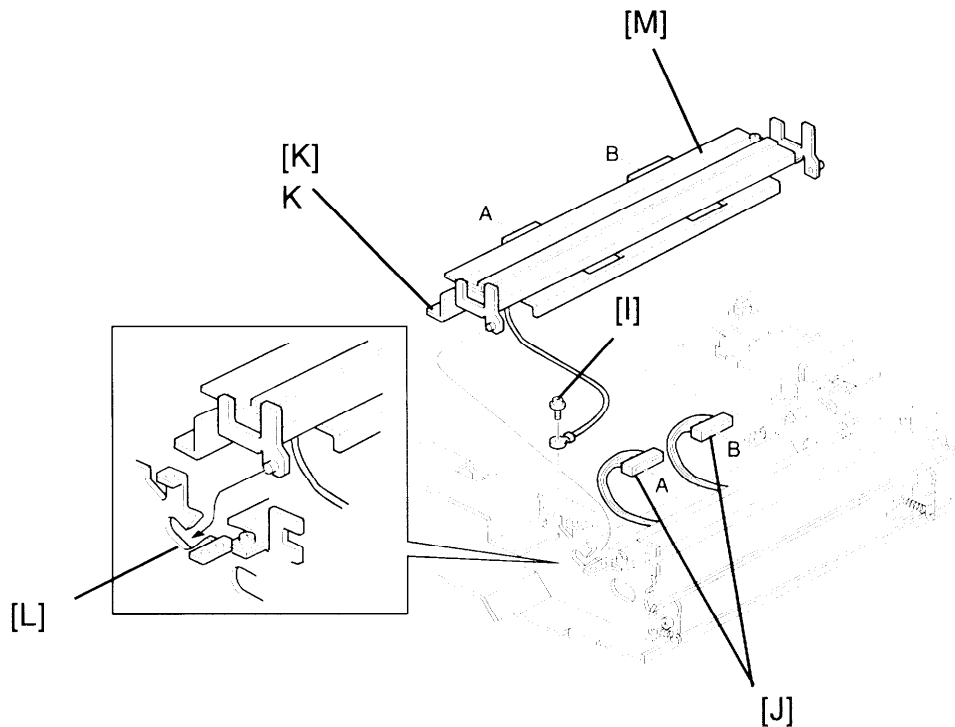
1. Turn off the main switch and disconnect the power plug.
2. Open the scanner unit.
3. Remove the platen roller cover [A].
4. Lift the platen roller release lever [B] up until it locks. Then, unhook the lock levers and remove the platen roller [C].



5. Remove the thermal head cover [D], then remove the release lever [E].
6. Remove the two springs [F].



7. Remove the cutter unit [H].



8. Remove the grounding screw [I].
9. Disconnect the connectors [J] from the thermal head.
10. Unhook the pins on non-operation sides of the thermal head bracket [K] through the cutout [L] and remove the bracket (with the thermal head).

NOTE: The cutout [L] has been newly added.

11. Remove the two screws and you can remove the thermal head [M].